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Underground Storage  
Tank Program

**DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL CONTROL**

**Actuarial Analysis of  
South Carolina Underground Storage Tank Program**

*Gregory T. Graves, FCAS, MAAA*  
*Simon K. Wong, FCAS, ASA, MAAA*

MILLIMAN USA, INC.  
ATLANTA, GEORGIA

October 31, 2001

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October 31, 2001

Mr. Stanley L. Clark, P.G.  
Assistant Chief of the Bureau of  
Land and Waste Management  
Department of Health & Environmental Control  
Bureau of Underground Storage Tank Management  
2600 Bull Street  
Columbia, South Carolina 29201

**RE: ACTUARIAL ANALYSIS OF THE UNDERGROUND STORAGE TANK PROGRAM**

Dear Mr. Clark:

This report presents Milliman USA's (Milliman's) actuarial analysis for the South Carolina underground storage tank (UST) program.

This version of our report represents a first draft only. We find it helpful to provide our clients with draft reports as well as a final report to describe our findings. The use of draft reports will allow the Department of Health and Environmental Control (DHEC) to provide us with feedback regarding our report and to point out any issues which may deserve additional or different treatment before we finalize the work product.

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## **ORGANIZATION**

The remainder of this report is organized as follows:

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October 31, 2001  
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## EXECUTIVE SUMMARY

Milliman was retained by DHEC to advise on the present and projected liabilities of the UST program. Our projections consist of two parts:

1. Proforma financial statements for the proposed mutual assurance fund starting on January 1, 2004 based on various assumptions on deductible, percentage of tank population insured, and capitalization level; and
2. Projection of revenues and liabilities under the Superb Account and Superb Financial Responsibility Fund (SFRF) for leaks reported through December 31, 2003.

### **Mutual Assurance Fund**

Based on information provided by DHEC, we projected liabilities for future leaks for 2004 through 2009. We also determined the minimum premiums the proposed mutual assurance fund would need to levy on its insureds for the first 6 years of operation for various deductible amounts. The following table summarizes our findings:

TABLE A MINIMUM PER TANK FEES FOR ALL RBCA CLASSES AND ALL THIRD PARTY CLAIMS						
Deductible Amount	Accident Year					
	2004	2005	2006	2007	2008	2009
\$1,000	\$1,058	\$1,111	\$1,167	\$1,226	\$1,288	\$1,353
\$5,000	\$1,033	\$1,085	\$1,140	\$1,197	\$1,258	\$1,321
\$10,000	\$1,003	\$1,054	\$1,107	\$1,162	\$1,221	\$1,283
\$15,000	\$973	\$1,022	\$1,074	\$1,128	\$1,184	\$1,244
\$20,000	\$942	\$989	\$1,039	\$1,092	\$1,147	\$1,205
\$25,000	\$912	\$958	\$1,006	\$1,057	\$1,110	\$1,166

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Note that the above premiums are applicable to various capitalization levels as well as percentages of nonfederal South Carolina USTs insured. Note also that these premiums assume breakeven underwriting results and an adequate initial capital.

Based upon our analysis, we estimate that an initial capital of \$6.2 million will be required for the mutual assurance fund. This is based upon the use of risk based capital as a benchmark for financial strength. Please refer to Appendix A for further discussion on this topic.

### Superb Account and SFRF

#### All RBCA Classes Liabilities

The Funds would be solvent on a cash flow basis through 2026 assuming liabilities for future reported leaks from January 1, 2004 and subsequent will be transferred to a mutual assurance fund. The following table summarizes our cash flow projections:

TABLE B CASH FLOW SUMMARY (\$000's) FOR ALL RBCA CLASSES AND ALL THIRD PARTY CLAIMS				
Beginning Assets at 12/31/2000	Projected Revenues through 2026	Projected Payments through 2026	Projected Investment Income through 2026	Ending Assets at 12/31/2026
\$17,212	\$460,802	\$177,224	\$175,305	\$476,095

Note that per DHEC's request, we assumed the department will continue to collect the \$0.005 per gallon impact fee through 2026. Details underlying the above Table B are shown on Appendix B, Exhibit 3.

In addition, as shown in the balance sheet on Appendix B, Exhibit 1, we estimated a negative surplus of \$128,799,000 at December 31, 2001 for the Funds, which means liability exceeds assets by that amount. We projected the Funds will continue to have a negative surplus until the end of year 2010.

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Most Serious and Highest Ranked Projects only (RBCA Classes 1 and 2)

Our results indicate that DHEC's current assets and projected revenues would be sufficient to fund all class 1 and 2 releases through 2026. In summary:

TABLE C CASH FLOW SUMMARY (\$000's) FOR ALL RBCA CLASS 1 AND 2 RELEASES ONLY AND ALL THIRD PARTY CLAIMS				
Beginning Assets at 12/31/2000	Projected Revenues through 2026	Projected Payments through 2026	Projected Investment Income through 2026	Ending Assets at 12/31/2026
\$17,212	\$460,802	\$99,269	\$312,448	\$691,193

The remainder of our report presents our conclusions and approach in detail, as well as the assumptions and limitations of our analysis.

**TERMINOLOGY**

Throughout this report, the term "loss" or "losses" refers to costs associated with cleanup and corrective action of leaked tanks under Superb Account, and to indemnity under SFRF. We understand that all expenses associated with the cleanup and corrective action of leaked tanks are included with the losses.

"Report year" refers to all of the confirmed releases which were reported within the specified year. Similarly, "report period" refers to all of the confirmed releases which were reported within the specified period. Furthermore, because the report years in DHEC's case run from January 1 through December 31, we refer to a year without reference to the starting month or date.

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"Exposure" usually represents a measure of size of DHEC's operations. For this purpose, we use the existing tank population. In addition, "exposure" can be used to refer more generally to the potential for loss.

## **BACKGROUND**

### **State Underground Petroleum Environmental Response Bank Act of 1988**

According to statute 44-2, the State Underground Petroleum Environmental Response Bank Act of 1988 was enacted to strengthen the regulatory control of USTs and to establish a separate account to serve as a depository for funds which will enable DHEC to respond without delay to incidents of contamination related to releases from USTs which store petroleum and petroleum products in order to protect the public health, safety, welfare, and minimize environmental damages. Two separate and distinct accounts were created by the state treasury and administered by DHEC:

*Superb Account* - This account is used for payment of usual, customary, and reasonable costs for site rehabilitation of releases from USTs containing petroleum or petroleum products.

*Superb Financial Responsibility Fund (SFRF)* - This account is used for compensating third parties for actual costs for bodily injury and property damage caused by accidental releases from USTs containing petroleum or petroleum products. The SFRF is not intended to reimburse claims for punitive damages.

The Superb Account and the SFRF (collectively as the Funds) shall provide combined coverage for site rehabilitation and third party claims, respectively, not to exceed \$1,000,000 per occurrence. The estimated cost of site rehabilitation is reserved from the combined coverage before payment of third party claims.

The Funds are funded by an environmental impact fee of one-half cent per gallon which is collected by the Department of Agriculture. DHEC also collects registration fee of \$100 for each tank every year which is used for its administration expenses. The amount used for administration may not exceed \$3,000,000 a year.

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DHEC's fiscal year currently runs from July 1 to June 30. No case reserves are set up for confirmed releases. Instead, commitments are set up for liabilities expected to be paid within the next 120 days.

### Amnesty Periods

Currently, the UST owner or operator is responsible for the first \$25,000 per occurrence for releases of petroleum and petroleum products from USTs reported to the department. DHEC informs us that there were two periods where no deductible applied. The first such "amnesty period" was from January 1, 1988 through December 31, 1989, and the other was from July 1, 1991 through June 30, 1993. In addition, DHEC informs us that from January 1, 1990 through May 8, 1990, the deductible was \$100,000. The deductibles for various periods are summarized below:

Period	Deductible in force
1/1/88 - 12/31/89	\$ 0
1/1/90 - 5/8/90	\$100,000
5/9/90 - 6/30/91	\$ 25,000
7/1/91 - 6/30/93	\$ 0
7/1/93 - Present	\$ 25,000

DHEC further informs us that the amnesty period also effectively waived the outstanding deductibles for releases reported during the period January 1, 1990 through June 30, 1991. In other words, on July 1, 1991, no prior releases were required to pay a deductible. However, deductibles already paid received no credit.

DHEC believed that the amnesty period help them identify more tanks previously not registered as well as releases not otherwise reported. It is our understanding that DHEC does not anticipate another amnesty period in the near future.

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### **Risk-Based Corrective Action (RBCA)**

The risk-based corrective action was instituted in June 1995 with the intent of assisting UST owners or operators and their contractors in making risk-based decisions concerning corrective action for releases of petroleum and petroleum products. The RBCA focuses on evaluation of risk of exposure for each chemical of concern and uses a three-tiered approach for evaluation of a petroleum releases. Based on initial release information and subsequently upon completion of each tier evaluation, each release is classified into categories 1, 2A, 2B, 3A, 3B, 4A, 4B or 5 depending on the current and projected degree of hazard to human health and the environment.

### **1998 Upgrade Standard**

Effective December 22, 1998, all operating UST systems are required to meet certain standards set by DHEC regarding such features as leak detection, cathodic protection and spill and overfill prevention equipment. UST systems not meeting this requirement after December 22, 1998 are not allowed to operate. It is our understanding that this December 22, 1998 deadline is for upgrade of tanks already in use; new tanks built since late 1980s have to meet this standard upon installation. As of December 31, 2000, almost all UST systems are in compliance.

### **Pay-for-Performance Corrective Action**

Before active corrective action is approved and implemented at any site, DHEC requests corrective action proposals from at least three separate site rehabilitation contractors. The selected contractor is compensated based on corrective action performance. Payment is made on demonstrated achievement of interim goals and the ultimate site specific target level or for each completed goal. DHEC believes that as a result of this pay-for-performance program, cleanups have been completed faster than before.

### **Proposed Mutual Assurance Fund**

DHEC is considering submitting legislation in 2002 to create a mutual assurance fund to provide interested South Carolina UST owners and operators with financial responsibility for

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corrective action and third party liability due to leaks from USTs. Under this proposal, the mutual assurance fund would provide coverage for future leaks for its insureds beginning on January 1, 2004. As of that date, the Superb Account and SFRF will then only address UST releases reported on or before December 31, 2003.

## **SCOPE OF ANALYSIS**

As stated in our proposal, the scope of this study includes:

- Determination of minimum premiums the proposed mutual assurance fund would need to levy on its insured for the first 6 years of operation in order to stay actuarially solvent and meet the financial criteria of the South Carolina Department of Insurance for deductible amounts of \$1,000, \$5,000, \$10,000, \$15,000, \$20,000, and \$25,000 based on the assumptions that 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90% of nonfederal South Carolina USTs are insured by the mutual assurance fund for the 6 years.
- Determination of whether the Superb Account and SFRF are actuarially solvent and whether there are adequate revenues to address needed site rehabilitation and third party claims.
- Determination of the total aggregate liability (including current liabilities and an estimate of future liabilities in established RBCA categories) through 2026, with an approximate cost/rate per release per risk category.

For the Funds, expenses related to the administration of the department including claims administration expenses are not included in our analysis. We therefore do not include the projected cost of administering DHEC or the projection of registration fees which are primarily used to fund the administration expenses.

For the proposed mutual assurance fund, our proforma statements includes a projection of administrative expenses based on expense assumptions.

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It is our understanding that only petroleum UST systems are covered by the program. Hazardous substance UST systems, above ground storage systems and UST systems covered under federal LUST funds are not covered.

## **CONCLUSIONS**

### **Mutual Assurance Fund**

Based on information provided by DHEC, we projected liabilities from future leaks for 2004 through 2009. We also determined the minimum premiums the proposed mutual assurance fund would need to levy on its insured for the first 6 years of operation for various deductible amounts. Our findings are summarized in Table A in the EXECUTIVE SUMMARY section.

Note that the premiums in Table A are applicable to various capitalization levels as well as percentages of nonfederal South Carolina USTs insured. These premiums assume breakeven underwriting results and an adequate initial capital.

To provide some measure of the size of the required capitalization, we estimated the amount of surplus the proposed mutual assurance fund would need assuming:

1. Policies are written with \$1,000 deductible; and
2. 100% of the eligible USTs will be insured by the proposed mutual assurance fund.

Since these assumptions will generate the largest amount of premium volume, the "maximum" amount of capital will be required under these assumptions. We then calculated the risk based capital for each year under these assumptions. Risk based capital is a measure of statutory minimum capital for insurance companies. Our projection shows that to meet the risk based capital each year through 2009 under the above two assumptions, a minimum initial capital of \$6.2 million is needed.

A description of risk based capital can be found in Appendix G.

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We include proforma financial statements for the proposed mutual assurance fund in Appendix A. These include an income statement, balance sheet, cash flow statement, tax calculation statement and results of IRIS tests and risk based capital calculations which are commonly used diagnostically by regulators of property and casualty insurers to assess financial strength. The loss assumptions underlying these statements are shown in Appendices D and E.

### **Superb Account and SFRF**

#### *All RBCA Classes Liabilities*

Based on our projection, the Funds would be solvent on a cash flow basis through 2026 assuming liabilities for future reported leaks from January 1, 2004 and subsequent will be transferred to a mutual assurance fund.

We include proforma financial statements for the Funds in Appendix B. These include an income statement, a balance sheet and a cash flow statement. The revenue and assumptions underlying these statements are shown in the Appendices C through E.

Based on our projection:

- The current (as of December 31, 2000) total liability for Superb Account and SFRF combined is \$155,643,000, and current invested assets amount to \$17,212,000, resulting in a deficit of \$138,430,000.
- The total amount of future losses we project for leaks and third party claims reported through December 31, 2003 is \$21,581,000. Assuming DHEC will continue to collect the \$0.005 per gallon impact fee through 2026, the projected revenues through 2026 are \$460,802,000. Using a 5% investment yield, the projected investment income through 2026 is \$175,305,000.
- Therefore, we project a surplus of \$476,095,000 based on leaks reported through December 31, 2003 and revenues to be collected through 2026.

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Our projected cash flows are summarized in Table B in the EXECUTIVE SUMMARY section.

*Most Serious and Highest Ranked Projects only*

We also perform additional analysis to determine whether revenues are sufficient to address needed site rehabilitation and third party claims such that DHEC is able to continue funding the most serious and highest ranked projects according to the RBCA ranking system. DHEC informs us that classes 1 and 2 would be considered the most serious for this analysis.

Based on our projection:

- The current (as of December 31, 2000) total liability for Superb Account and SFRF combined is \$87,205,000, and current invested assets amount to \$17,212,000, resulting in a deficit of \$69,993,000.
- The total amount of future losses we project for class 1 and 2 leaks and third party claims reported through 2003 is \$12,064,000, and the projected revenues and investment income through 2026 are \$460,802,000 and \$312,448,000, respectively.
- Therefore, an overall surplus of \$691,193,000 is projected.

Based on the above, it appears that DHEC's current assets and projected revenues would be sufficient to fund all class 1 and 2 releases through 2026.

Our projected cash flows are summarized in Table C in the EXECUTIVE SUMMARY section.

Note that in estimating the above liabilities for RBCA classes 1 and 2 only, we assumed the percentage of class 1 and 2 losses to be 55.9% of losses for all classes. This percentage is based on distribution of total losses by RBCA class as shown in Appendix E, column (C).

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Severity by RBCA Class

We estimate loss severity by RBCA class, and results are summarized in the following table:

RBCA Class	Estimated Severity
1	\$576,000
2A	\$297,000
2B	\$269,000
3A	\$259,000
3B	\$154,000
4A	\$122,000
4B	\$102,000
5	\$ 38,000

The above severities are presented on a net of deductible basis. For example, the severity for the average RBCA class 1 leak is \$576,000 above and beyond the \$25,000 deductible.

Note that these severities are not directly comparable to the severities in our last study as of December 31, 1998 since they were calculated on a different basis. In our last study, counts for releases without payment were not available, and we therefore calculated severities based on all releases. In this study, we were provided with a release database which allows us to determine the number of releases with payment, and we calculated severities based only on releases with payment. As a result of this change in release count, our calculated severities are not comparable to those from our last study.

Please also note that the RBCA class for individual leaks can change many times over the life of the leak. For the purpose of determining severity, DHEC assigned RBCA class to a leak based on the highest class a leak has ever been categorized, i.e. using the most severe class based on its history.

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## **APPROACH**

Our proforma study for the proposed mutual assurance fund is shown in Appendix A.

Our proforma study for the Funds is shown in Appendix B.

In Appendix C, we show our projection of revenues for DHEC which is used in Appendix B.

In Appendices D and E, we show our projection of site rehabilitation/Superb Account Losses and third party liability/SFRF losses, respectively. These losses are used in our proforma statements in Appendices A and B.

Description of each appendix follows this cover letter.

## **DATA**

Our work is based upon the following information specific to DHEC:

- (1) Loss reports showing paid losses net of deductible and deductible losses for each report/calendar year valued as of December 31 for report years 1988 through 2000;
- (2) UST database as of August 3, 2001 in electronic format for all releases as well as for releases from permitted and upgraded tanks only;
- (3) Quarterly financial reports showing receipts and expenditures for fiscal year 1989 to present;
- (4) STARS report prepared by the Environmental Protection Agency (EPA) containing information on number of tanks and cleanups;

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- (5) Listing of net collections of environmental impact fees by month provided by State of South Carolina Department of Revenue;
- (6) Various reports such as "Underground Storage Tank Control Regulations", "Superb Site Rehabilitation and Fund Access Regulations", "Corrective Action Guidance", "South Carolina Risk-Based Corrective Action for Petroleum Releases";
- (7) A listing of all third party liability claims as of August 3, 2001;
- (8) Loss run showing payments and confirmed release counts by RBCA class as of August 3, 2001;
- (9) Other information and data provided to us when we performed our last actuarial study for DHEC as of December 31, 1998; and
- (10) DHEC's answers to various questions which were directed to Richard Lipkin, Information Resource Consultant, Arthur Shrader, Director of Assessment & Corrective Action Division, Laura Pace, Manager of the Financial Section, and you.

In addition, we made use of the following:

- (1) Industry actuarial information available to Milliman;
- (2) Milliman's judgment based upon our experience with state underground storage tank funds.

## **LIMITATIONS**

*Uncertainty.* We based our results on generally accepted actuarial procedures and judgments. Our results reflect assumptions regarding premium and revenue growth, loss development, trend, payout patterns, interest rates, confirmed release reporting patterns and trend and other

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quantities. Due to the uncertainty associated with the estimation of future loss payments and the inherent limitations of the data, actual results will vary from our projections. This uncertainty may be substantial due to the judgmental nature of the projections and the slow development and volatility of the underlying claim database as well as changes in the program such as the amnesty periods and 1998 upgrade requirements. Note that uncertainty tends to increase the further into the future projections are made.

*Distribution.* This report was prepared for the use of and only to be relied upon by the management of South Carolina Department of Health and Environmental control. No portion of the report may be provided to any other party without Milliman's prior written consent. In the event such consent is provided, the report must be provided in its entirety. We recommend that any such party have their own actuary review this report to ensure that the party understands the assumptions and uncertainties inherent in our estimates. This report may not be filed with the SEC or other securities regulatory bodies.

*Data Reliances.* We based our analysis on data as well as qualitative information provided to us by DHEC. We did not audit, verify, or review this data and other information for reasonableness or consistency. We did not reconcile DHEC's various data sources. Such a review is beyond the scope of our assignment. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

*Variability in Projected Future Years.* Our loss projection result represents an average of hypothetical loss experience scenarios for the years being studied. This variability in loss experience can produce results which differ significantly from year to year.

*Monitoring of Tanks in Future Years.* Our estimated frequencies and severities for confirmed releases in future projected years are based upon the assumption that the upgraded tanks will be closely monitored and inspected. To the extent that tanks were not closely monitored as assumed, our results could change significantly.

*Future Premium Rates.* We projected premiums per tank for the first six years of operation for the mutual assurance fund. The UST program and its resulting experience should be evaluated periodically in the future to determine if these premium rates remain appropriate for the mutual assurance fund over time.

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*Interest Rates.* The assumed annual interest rate of 5% was selected by DHEC. We did not examine DHEC's assets with respect to their ability to support this interest rate. We offer no opinion as to whether this rate of return on investments will actually be realized.

*Adverse Selection.* Our projected tank fees are based on historical experience for all eligible USTs. If it becomes voluntary for UST owners to obtain insurance from carriers and some of the eligible USTs choose not to be insured by the mutual assurance fund, the mutual assurance fund would have to evaluate each site and tank carefully for each potential insured to avoid adverse selection.

*Responsibility for Program.* It is not possible to guarantee the financial success of the UST program for DHEC or the proposed mutual assurance fund. Responsibility for the success or failure of the UST program rests ultimately with DHEC and the proposed mutual assurance fund.

Milliman appreciates the opportunity to offer actuarial services to DHEC. Please call with any questions about this report.

Sincerely,

Gregory T. Graves, FCAS, MAAA  
Consulting Actuary

Simon K. Wong, FCAS, ASA, MAAA  
Actuary

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**PROFORMA FINANCIAL STATEMENTS  
FOR  
PROPOSED MUTUAL ASSURANCE FUND  
2004 THROUGH 2009**

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# **DESCRIPTION OF APPENDIX A**

## **PROFORMA FINANCIAL STATEMENTS FOR PROPOSED MUTUAL ASSURANCE FUND**

This appendix presents the proforma financial statements for the proposed mutual assurance fund. It includes an income statement, a balance sheet, a cash flow exhibit, tax calculation statement and results of IRIS tests and risk based capital calculations which are commonly used diagnostically by regulators of property and casualty insurers to assess financial strength. We also included exhibits showing the assumptions used in these proforma statements. Per DHEC, we included projections for 2004 through 2009 which represent the first 6 years of operation for the mutual assurance fund.

The scenario shown in these proforma statements in Appendix A assumes the company writes policies with a \$1,000 deductible, has \$6,200,000 as initial capital, and that 100% of the nonfederal South Carolina USTs will be insured under this mutual assurance fund.

### **Premiums**

We determined the minimum premiums the proposed mutual assurance fund would need to levy on its insureds for the first 6 years of operation based on various assumptions on deductible amounts, capitalization level, and percentage of nonfederal South Carolina USTs insured. We determined these premiums by projecting the losses and expenses for various deductibles and then calculating a first year premium that would produce a breakeven underwriting result. Premiums for subsequent years are projected assuming a trend similar to the assumed frequency and severity trends for losses. These premiums also generate approximately breakeven underwriting results through 2009.

### **Capitalization Levels and Percentage of Tanks Insured**

The premiums we projected and as shown in Table A earlier are applicable to various capitalization levels and percentages of tanks insured, as long as an adequate initial capital is available to the mutual assurance fund.

Capital assumptions affect surplus positions and investment income. Since we determined premiums based on breakeven *underwriting* results, the initial capital to the proposed mutual assurance fund would not affect the premiums assuming initial capital is sufficient. If sufficient capitalization is not available initially, premiums would need to be increased to build an adequate capitalization for the mutual assurance fund.

The percentage of tanks insured affects the amount of losses incurred in total but not losses per tank. Since premium is defined as a per tank fee, the premiums charged for each tank would not vary by percentages of tanks insured.

#### Initial Capitalization Level

As mentioned in the CONCLUSIONS section of the report, we estimated an initial minimum required capital of \$6.2 million for the proposed mutual assurance fund assuming that:

1. Policies are written with \$1,000 deductible; and
2. 100% of the eligible USTs will be insured by the proposed mutual assurance fund.

Since these assumptions will generate the largest amount of premium volume, the largest amount of capital will be required under these assumptions. For planning purposes, we believe that obtaining initial capital of \$6.2 million or more will allow for the mutual assurance fund to be established with adequate risk based capital for any combination of deductibles and percentages of eligible USTs insured.

It should be noted that if the mutual assurance fund were to write policies of higher deductible amounts, or if less than 100% of the eligible USTs were insured by it, the indicated risk based capital would decrease, and hence the required initial capital would be less than \$6.2 million as well.

Note also that this \$6.2 million of surplus does not represent our recommended level of capitalization. Rather, it is intended to provide a benchmark for DHEC and the proposed mutual assurance fund to consider.

### Expense Assumptions

In our proforma, we assumed an expense ratio of 31.3%. This expense ratio is based on an industry average expense ratio for very small insurers operating in the long-tail commercial lines market in 1999 according to A.M. Best. (Source: "A Special Supplement to Best's Review and BestWeek - Property/Casualty Edition - January 1999" published by A.M. Best) Note that if the expense ratio for proposed mutual assurance fund is lower than the assumed industry ratio of 31.3%, the corresponding minimum premiums could be lower as well.

### Loss Payout

We assumed a loss payout pattern based on an industry claims-made general liability payout. (Source: "Loss and Loss Adjustment Expense Reserves at Year-End 1999: Technical Analysis" published by Insurance Services Office, Inc.) This payout pattern is faster than the Funds' historical pattern as shown in Appendix D, Section II, Exhibit 3.

We elected to use the industry payout pattern and not the Fund's historical pattern in the proforma for the mutual assurance fund due to the following reasons:

- Historical payout pattern for the Funds has been distorted/complicated by such issues as amnesty periods, pay-for performance corrective action, and the 1998 upgrade deadline.
- Historical payout pattern for the Funds has also been affected by the amount of funding DHEC received to pay losses. The proposed mutual assurance fund is expected to pay losses as releases are reported and confirmed.
- Historical payout pattern for the Funds includes releases from all tanks, both upgraded and not upgraded. The proposed mutual assurance fund would only cover releases from upgraded tanks.

Based on the above reasons, we believe historical payout pattern for the Funds may not be applicable for the proposed mutual assurance fund. Therefore, we selected an industry based payout pattern for the proposed mutual assurance fund. We note that the faster industry payout pattern provides some degree of conservatism in the proforma as less investment income would be generated.

Description of Appendix A - Page 3

MILLIMAN USA

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Note that while payout patterns can be somewhat different under different deductibles, we assumed the same payout pattern for various deductible assumptions in our proforma study.

#### Losses Net of Deductible

To generate premiums for various deductible assumptions, we estimated losses net of deductible for these various assumptions. We estimated these net of deductible losses by subtracting the deductible from the average severity gross of deductible. For example, we estimated losses net of \$1,000 deductible to be \$149,000 by subtracting \$1,000 from the \$150,000 selected average severity gross of deductible from Appendix D. In other words, we assumed that all losses would exceed the deductible. Based on a review of the release database provided by DHEC and the range of deductibles, we believe this assumption is reasonable.

#### Reinsurance

We have not assumed any reinsurance arrangement for the proposed mutual assurance fund.

#### Federal Income Tax

We have assumed that the proposed mutual assurance fund would be subject to federal income taxes as is the case for other property and casualty insurance companies.

South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

	Actual 2003	2004	2005	2006	2007	2008	2009
<b>STATUTORY INCOME STATEMENT</b>							
Direct Written Premium	\$12,800	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Ceded Written Premium		0	0	0	0	0	0
Net Written Premium	12,800	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Direct Earned Premium		13,772	14,539	15,405	16,343	17,339	18,395
Net Earned Premium		13,772	14,539	15,405	16,343	17,339	18,395
AY Direct Incurred Losses		\$9,462	\$9,991	\$10,588	\$11,235	\$11,923	\$12,651
AY Ceded Incurred Losses		\$0	\$0	\$0	\$0	\$0	\$0
AY Net Incurred Losses	\$0	\$9,462	\$9,991	\$10,588	\$11,235	\$11,923	\$12,651
AY Net Disc. Incurred Losses		\$9,462	\$9,991	\$10,588	\$11,235	\$11,923	\$12,651
AY Direct Incurred LAE		0	0	0	0	0	0
AY Ceded ALAE		0	0	0	0	0	0
AY Net Incurred LAE		\$0	\$0	\$0	\$0	\$0	\$0
AY Net Disc. Incurred LAE		\$0	\$0	\$0	\$0	\$0	\$0
Reserve Strengthening (Undisc.)		\$0	\$0	\$0	\$0	\$0	\$0
Salvage/Subrogation Recoveries		0	0	0	0	0	0
Accrual of Prior Years' Discount		0	0	0	0	0	0
Total Incurred Net Loss & LAE	\$0	\$9,462	\$9,991	\$10,588	\$11,235	\$11,923	\$12,651
Agents' Commissions		0	0	0	0	0	0
Other Underwriting Expenses		4,138	4,369	4,629	4,911	5,210	5,528
Premium Taxes		172	182	193	204	217	230
Reinsurance Commissions		0	0	0	0	0	0
Total Underwriting Expenses	\$0	\$4,310	\$4,551	\$4,822	\$5,115	\$5,427	\$5,758
Underwriting Income	\$0	\$0	(\$3)	(\$5)	(\$7)	(\$11)	(\$14)
Investment Income		448	792	1,087	1,343	1,570	1,782
Other Income		0	0	0	0	0	0
Dividends to Policyholders		0	0	0	0	0	0
Interest Expense		0	0	0	0	0	0
Pre-tax Income	\$0	\$448	\$789	\$1,082	\$1,336	\$1,559	\$1,768
Federal Income Tax		699	583	474	395	395	426
Net Income	\$0	(\$251)	\$206	\$608	\$941	\$1,164	\$1,342

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

	Actual 2003	2004	2005	2006	2007	2008	2009
Investments & Cash	\$0	\$0	\$0	(\$1)	\$0	\$0	\$0
Taxable Bonds	0	11,160	16,787	21,593	25,791	29,602	33,251
Non-taxable Bonds	0	0	0	0	0	0	0
Stocks - Preferred	0	0	0	0	0	0	0
Stocks - Common	0	0	0	0	0	0	0
Cash	6,200	3,720	5,596	7,198	8,597	9,867	11,084
Real Estate	0	0	0	0	0	0	0
Other Income Producing Assets	0	0	0	0	0	0	0
Total Investments & Cash	\$6,200	\$14,880	\$22,383	\$28,790	\$34,388	\$39,469	\$44,335
Premium Receivable	0	0	0	0	0	0	0
Receivables from Reinsurers	0	0	0	0	0.0	0	0
Other Assets	0	0	0	0	0	0	0
TOTAL ASSETS	\$6,200	\$14,880	\$22,383	\$28,790	\$34,388	\$39,469	\$44,335
Undiscounted Net Loss Reserve	\$0	\$8,756	\$16,082	\$21,908	\$26,585	\$30,502	\$34,018
Undiscounted Net LAE Reserve	0	0	0	0	0	0	0
Disc. on Loss & LAE Reserve	0	0	0	0	0	0	0
Statutory Reserve	0	0	0	0	0	0	0
Total Loss & LAE Reserve	\$0	\$8,756	\$16,082	\$21,908	\$26,585	\$30,502	\$34,018
Net Unearned Premium Reserve	0	0	0	0	0	0	0
Expenses Payable	0	0	0	0	0	0	0
Income Taxes Payable	0	175	146	119	99	99	107
Dividends Declared and Unpaid	0	0	0	0	0	0	0
Policyholders	0	0	0	0	0	0	0
Stockholders	0	0	0	0	0	0	0
Balances due Reinsurers	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0
TOTAL LIABILITIES	\$0	\$8,931	\$16,228	\$22,027	\$26,684	\$30,601	\$34,125
Capital	\$6,200	\$6,200	\$6,200	\$6,200	\$6,200	\$6,200	\$6,200
Surplus Notes	0	0	0	0	0	0	0
Unassigned Funds	0	(251)	(45)	563	1,504	2,668	4,010
POLICYHOLDER SURPLUS	\$6,200	\$5,949	\$6,155	\$6,763	\$7,704	\$8,868	\$10,210
TOTAL LIABILITIES & SURPLUS	\$6,200	\$14,880	\$22,383	\$28,790	\$34,388	\$39,469	\$44,335

STATUTORY BALANCE SHEET  
=====

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

	Actual 2003	2004	2005	2006	2007	2008	2009
<b>CASH FLOW</b>							
=====							
Direct Premium Collected	\$0	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Premium Ceded	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Premium Collected	\$0	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Reinsurance Commissions	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sal./Subro. Recoveries	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interest & Dividends	\$0	\$448	\$792	\$1,087	\$1,343	\$1,570	\$1,782
Realized Capital Gains	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Received	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Contributions	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Increase in Surplus Notes	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TOTAL COLLECTED</b>	\$0	\$14,220	\$15,331	\$16,492	\$17,686	\$18,909	\$20,177
Direct Losses Paid	\$0	\$706	\$2,665	\$4,762	\$6,558	\$8,006	\$9,135
Loss Recoveries Received	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Losses Paid	\$0	\$706	\$2,665	\$4,762	\$6,558	\$8,006	\$9,135
Direct LAE Paid	\$0	\$0	\$0	\$0	\$0	\$0	\$0
LAE Recoveries Received	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net LAE Paid	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-admitted Assets Purchased	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Underwriting Expenses Paid	\$0	\$4,310	\$4,551	\$4,822	\$5,115	\$5,427	\$5,758
Federal Income Tax Paid	\$0	\$524	\$612	\$501	\$415	\$395	\$418
Stockholder Dividends Paid	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Policyholder Dividends Paid	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Principal Repayment	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interest Expense	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TOTAL PAID</b>	\$0	\$5,540	\$7,828	\$10,085	\$12,088	\$13,828	\$15,311
<b>NET CASH FROM OPERATIONS</b>	\$0	\$8,680	\$7,503	\$6,407	\$5,598	\$5,081	\$4,866
Proceeds from Sale of Old Bonds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Cost of Investments Acquired	\$0	\$11,160	\$5,627	\$4,805	\$4,199	\$3,811	\$3,649
<b>NET CHANGE IN CASH</b>	\$0	(\$2,480)	\$1,876	\$1,602	\$1,399	\$1,270	\$1,217

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

SURPLUS STATISTICS		2004	2005	2006	2007	2008	2009
Premium/Surplus Ratio		2.32	2.36	2.28	2.12	1.96	1.80
Target		0.00	0.00	0.00	0.00	0.00	0.00
Reserve/Surplus Ratio		1.47	2.61	3.24	3.45	3.44	3.33
Target		0.00	0.00	0.00	0.00	0.00	0.00
Interest Due on Surplus Notes		\$0	\$0	\$0	\$0	\$0	\$0
IRIS TESTS							
Net Premium-to-Surplus		232%	236%	228%	212%	196%	180%
Pass (0)/Fail (1)		0	0	0	0	0	0
Change in Writings		8%	6%	6%	6%	6%	6%
Pass (0)/Fail (1)		0	0	0	0	0	0
Surplus Aid to Surplus		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pass (0)/Fail (1)		0	0	0	0	0	0
Two-Year Overall Operating Ratio		81.7%	95.6%	93.8%	92.4%	91.4%	90.7%
Pass (0)/Fail (1)		0	0	0	0	0	0
Investment Yield		4.3%	4.3%	4.2%	4.3%	4.3%	4.3%
Pass (0)/Fail (1)		1	1	1	1	1	1
Change in Surplus		-4%	3%	10%	14%	15%	15%
Pass (0)/Fail (1)		0	0	0	0	0	0
Liabilities to Liquid Assets		60%	73%	77%	78%	78%	77%
Pass (0)/Fail (1)		0	0	0	0	0	0
Agents Balances to Surplus		0%	0%	0%	0%	0%	0%
Pass (0)/Fail (1)		0	0	0	0	0	0
One-Year Reserve Dev. to Surplus		0%	0%	0%	0%	0%	0%
Pass (0)/Fail (1)		0	0	0	0	0	0
Two-Year Reserve Dev. to Surplus		0%	0%	0%	0%	0%	0%
Pass (0)/Fail (1)		0	0	0	0	0	0
Est. Current Res. Def. to Surplus		NA	NA	-126%	-77%	-46%	-28%
Pass (0)/Fail (1)		1	1	0	0	0	0
Gross Written Premium to Surplus		232%	236%	228%	212%	196%	180%
Pass (0)/Fail (1)		0	0	0	0	0	0
Number Calculated		10	12	12	12	12	12
Number Failed		1	2	1	1	1	1

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

TAX CALCULATION	2004	2005	2006	2007	2008	2009
Net Earned Premium	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Net Incurred Loss & LAE (Undisc.)	9,462	9,991	10,588	11,235	11,923	12,651
Net Commissions	0	0	0	0	0	0
Other Underwriting Expenses	4,310	4,551	4,822	5,115	5,427	5,758
Underwriting Income	\$0	(\$3)	(\$5)	(\$7)	(\$11)	(\$14)
Policyholder Dividends	0	0	0	0	0	0
Underwriting Income after Div.	\$0	(\$3)	(\$5)	(\$7)	(\$11)	(\$14)
Loss Reserve Discount	\$1,945	\$1,521	\$1,126	\$834	\$712	\$696
Proration	59	105	144	178	208	236
Revenue Offset	0	0	0	0	0	0
Sal/Subro Fresh Start	0	0	0	0	0	0
Total Adjustments	\$2,004	\$1,626	\$1,270	\$1,012	\$920	\$932
Adjusted Underwriting Income	\$2,004	\$1,623	\$1,265	\$1,005	\$909	\$918
Taxable Interest Income	\$53	\$93	\$128	\$158	\$185	\$210
Dividends	0	0	0	0	0	0
Dividend Credit	0	0	0	0	0	0
Capital Gains	0	0	0	0	0	0
Capital Gain Carryforward Used	0	0	0	0	0	0
Taxable Other Income	0	0	0	0	0	0
Interest Expense	0	0	0	0	0	0
Total Taxable Investment Income	\$53	\$93	\$128	\$158	\$185	\$210
Regular Gross Taxable Income	\$2,057	\$1,716	\$1,393	\$1,163	\$1,094	\$1,128

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

TAX CALCULATION (CONT.)	2004	2005	2006	2007	2008	2009
Regular Gross Taxable Income	\$2,057	\$1,716	\$1,393	\$1,163	\$1,094	\$1,128
Regular Tax Loss Carryforward	0	0	0	0	0	0
Regular Net Taxable Income	\$2,057	\$1,716	\$1,393	\$1,163	\$1,094	\$1,128
Regular Tax	\$699	\$583	\$474	\$395	\$372	\$384
Alt. Min. Credit Used	0	0	0	0	0	0
Adjusted Curr. Earnings	\$2,393	\$2,310	\$2,208	\$2,170	\$2,271	\$2,464
Book/Tax Preference	252	446	611	755	883	1,002
Other Tax Preferences	0	0	0	0	0	0
Alternative Gross Tax. Income	\$2,309	\$2,162	\$2,004	\$1,918	\$1,977	\$2,130
Alt. Tax Loss Carryforward	0	0	0	0	0	0
Alternative Net Taxable Income	\$2,309	\$2,162	\$2,004	\$1,918	\$1,977	\$2,130
Alt. Min. Exemption	0	0	0	0	0	0
Alternative Minimum Tax	\$462	\$432	\$401	\$384	\$395	\$426
Federal Income Tax	\$699	\$583	\$474	\$395	\$395	\$426

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South Carolina UST Mutual Assurance Fund  
ALL LINES OF BUSINESS COMBINED

INVESTED ASSET RISK	Factor	2004	2005	2006	2007	2008	2009
Bonds	0.3%	\$11,160	\$16,787	\$21,592	\$25,791	\$29,602	\$33,251
Common Stocks	15.0%	0	0	0	0	0	0
Preferred Stocks	2.3%	0	0	0	0	0	0
Cash	0.3%	3,720	5,596	7,198	8,597	9,867	11,084
Real Estate	10.0%	0	0	0	0	0	0
Short-Term Investments	0.3%	0	0	0	0	0	0
Fixed-Income RBC		\$45	\$67	\$86	\$103	\$118	\$133
Equity-Asset RBC		\$0	\$0	\$0	\$0	\$0	\$0
CREDIT RISK							
Reinsurance Ceded (excl. US affiliates, pools)	10.0%	\$0	\$0	\$0	\$0	\$0	\$0
All Other Receivables	1.0%	0	0	0	0	0	0
Credit RBC		\$0	\$0	\$0	\$0	\$0	\$0
PREMIUM RISK							
Total of By-Line RBC		\$2,575	\$2,719	\$2,881	\$3,056	\$3,242	\$3,440
Premium Concentration Factor		1,000	1,000	1,000	1,000	1,000	1,000
Premium RBC		\$2,575	\$2,719	\$2,881	\$3,056	\$3,242	\$3,440
RESERVE RISK							
Total of By-Line RBC		\$2,317	\$4,256	\$5,798	\$7,035	\$8,072	\$9,002
Reserve Concentration Factor		1,000	1,000	1,000	1,000	1,000	1,000
Reserve RBC		\$2,317	\$4,256	\$5,798	\$7,035	\$8,072	\$9,002
GROWTH RISK							
Three-Year Average Growth		7.8%	6.9%	6.4%	6.1%	6.1%	6.1%
Net Written Premium	22.5%	\$13,772	\$14,539	\$15,405	\$16,343	\$17,339	\$18,395
Net Loss & LAE Reserves	45.0%	8,756	16,082	21,908	26,585	30,502	34,018
Growth RBC		\$0	\$0	\$0	\$0	\$0	\$0
INDICATED RBC		\$3,464	\$5,051	\$6,475	\$7,671	\$8,700	\$9,638
ADJUSTED SURPLUS		\$5,949	\$6,155	\$6,763	\$7,704	\$8,868	\$10,210

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South Carolina UST Mutual Assurance Fund  
2004

COMPANY NAME  
FIRST PROJECTED YEAR:

For Year Ending:

2003

Statutory Balance Sheet Items

Assets

Other Assets

Liabilities

Expenses Payable

Income Taxes Payable

Dividends Declared and Unpaid

Policyholders

Stockholders

Other Liabilities

Surplus

Capital

Unassigned Funds

Surplus Notes

Accrued Interest

GAAP Balance Sheet Items

Allowed Non-admitted Assets

Unrealized Capital Gains

Premium Deficiency Reserve

Dividends Incurred and Undeclared

Policyholders

Stockholders

Deferred Federal Income Taxes

Tax Information

Regular Tax Loss Carryforward

Alternate Tax Loss Carryforward

Capital Gain Carryforward

AMT Credit Available

Unearned Premium Reserve @12/31/86

Discounted Sal/Subro Reserve @12/31/89

12/31/89 Tax Res. Gross of Sal/Subro?

Distribution of Assets

Taxable Bonds

Non-Taxable Bonds (pre-8/86)

Non-Taxable Bonds (post-8/86)

Preferred Stocks

Common Stocks

Cash

Real Estate

Other Income Producing Assets

TOTAL

2003

0.0%

0.0%

0.0%

0.0%

100.0%

100.0%

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Projection Year:	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
------------------	------	------	------	------	------	------	------	------	------	------

## Direct Written Premium

Average Rate

### Number of Written Exposures

Retention Ratio

% Prem. Earned in Curr

Policyholder Div. - Incurred

Policyholder Div. - Paid

### Loss Data - Accident Year

### Pure Premium - Losses

### Pure Premium - ALAE

GAAP Discount Rate

Total./Subtotal. (% of net loss)

Expense Data - Calendar

Premium Tax (%)

Fixed

Variable (% of DWP)

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Third Party Liability  
Projection Data

Projection Year: 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

Premium Data - Policy Year

Direct Written Premium

[Premium input is overridden if both average rate and derived exposure are non-zero.]

Average Rate

Number of Written Exposures

[Exposure input is replaced by derived value if either retention or new business rate is non-zero.]

Retention Ratio

Percent New Business

% Prem. Earned in Current Yr.

Premium Collection Lag (mos.)

Policyholder Div. - Incurred

Policyholder Div. - Declared

Policyholder Div. - Paid

Loss Data - Accident Year

Expected Direct Loss Ratio

Pure Premium - Losses

Direct ALAE (% of loss)

Pure Premium - ALAE

ALAE (% of loss)

SAAP Discount Rate

Statutory Discount Rate

Sal./Subro. (% of net loss)

Expense Data - Calendar Year

Agents' Commissions (% of DWP)

Premium Tax (%)

Other Underwriting Expenses

Fixed

Variable (% of DEP)

Variable (% of DWP)

% of Other UW Exp. Deferable

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Site Rehabilitation  
Payment Patterns

for GAAP and Statutory Reserves

AY+	Loss & LAE Payments	Sal/Subro
	Direct	Ceded Recoveries
0	7.46%	7.46%
1	20.28%	20.28%
2	20.56%	20.56%
3	16.04%	16.04%
4	11.18%	11.18%
5	6.84%	6.84%
6	4.51%	4.51%
7	2.64%	2.64%
8	1.80%	1.80%
9	1.27%	1.27%
10	1.27%	1.27%
11	1.27%	1.27%
12	1.27%	1.27%
13	1.27%	1.27%
14	1.27%	1.27%
15	1.07%	1.07%
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30	0.00%	100.00%

MILLIMAN USA

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**Site Rehabilitation  
Tax Assumptions**

For Payment Pattern enter your input pattern number or a Treasury pattern code (see manual). For Rate, enter a rate or "IRS" for most recent Treasury rate.

Accident Yr.	Payment Pattern	Discount Rate
1984		IRS
1985		IRS
1986		IRS
1987		IRS
1988		IRS
1989		IRS
1990		IRS
1991		IRS
1992		IRS
1993		IRS
1994	OL96	IRS
1995	OL96	IRS
1996	OL96	IRS
1997	OL96	IRS
1998	OL96	IRS
1999	OL96	IRS
2000	OL96	IRS
2001	OL96	IRS
2002	OL96	IRS
2003	OL96	IRS
2004	OL96	IRS
2005	OL96	IRS
2006	OL96	IRS
2007	OL96	IRS
2008	OL96	IRS
2009	OL96	IRS
2010	OL96	IRS
2011	OL96	IRS
2012	OL96	IRS
2013	OL96	IRS

-----> End of LOB Input <-----

**Distribution of Business in this Line  
Among RBC Lines**

This data is also used for the Schedule P penalty calculation.

	Premium	Reserves
Homeowners		
PP Auto Liability		
Comm. Auto Liability		
Workers' Compensation		
Multi-Peril		
Medical Malpractice		
Special Liability		
Other Liability	100.00%	100.00%
Two-Year Lines		
International		
Reinsurance A&C		
Reinsurance B		
Reinsurance D		
Products Liability		

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**APPENDIX B**

**PROFORMA FINANCIAL STATEMENTS  
FOR  
SUPERB ACCOUNT AND SFRF  
THROUGH 2026**

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# **DESCRIPTION OF APPENDIX B**

## **PROFORMA FINANCIAL STATEMENTS FOR SUPERB ACCOUNT AND SFRF**

This appendix presents the proforma financial statements for the Funds. Each of the following exhibits contains Sheets 1 through 3 for results through calendar year 2026.

### **Exhibit 1**

This exhibit shows DHEC's income statement for calendar years 2001 through 2026.

### **Exhibit 2**

This exhibit shows DHEC's balance sheet at end of calendar years 2000 through 2026.

### **Exhibit 3**

This exhibit shows DHEC's cash flow statement for calendar years 2001 through 2026.

Sheets 1a through 3a represent a summary of cash inflow and outflow. Note that calendar year paid losses are separated into payout of current reserves in item B and payout of future releases in item C.

Sheets 1b through 3b and Sheets 1c through 3c present details of those cash flow including calculation of investment income.

Note that the 5% investment return was selected by DHEC.

Regarding payout of liabilities for the Superb Account, we assumed a pattern based on DHEC's historical payout with judgmental extrapolation out to 240 months. Note that we selected an industry based payout pattern in Appendix A for the proposed mutual assurance fund since

we believe historical payout pattern for the Funds may not be applicable to losses covered by the mutual assurance fund. In this appendix where we project future payments of losses covered by the Funds, we believe the historical payout pattern may still be applicable. Although as mentioned in our last report, it is possible that claims could be paid under a different pattern for years 1995 and subsequent, this cannot be confirmed yet due to the immaturity and the small volume of data for these more recent years. Therefore, we continue to use the historical payout pattern for the Funds in this appendix.

Note also that the loss reserves presented in this appendix are on an undiscounted basis.

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#### Description of Appendix B - Page 2

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
INCOME STATEMENT (\$000's)

APPENDIX B  
EXHIBIT 1  
SHEET 1

	Year Ending 2001	Year Ending 2002	Year Ending 2003	Year Ending 2004	Year Ending 2005	Year Ending 2006	Year Ending 2007	Year Ending 2008	Year Ending 2009	Year Ending 2010
<b>UNDERWRITING INCOME:</b>										
Environmental Impact Fee	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069
Total Underwriting Revenue	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069
<b>UNDERWRITING DEDUCTIONS:</b>										
Losses Incurred - SUPERB	6,694	7,200	7,675	0	0	0	0	0	0	0
Losses Incurred - SFRF	4	4	4	0	0	0	0	0	0	0
Total Underwriting Deductions	6,698	7,204	7,680	0	0	0	0	0	0	0
<b>NET UNDERWRITING GAIN (LOSS)</b>	<b>8,909</b>	<b>8,559</b>	<b>8,241</b>	<b>16,080</b>	<b>16,241</b>	<b>16,403</b>	<b>16,567</b>	<b>16,733</b>	<b>16,900</b>	<b>17,069</b>

<b>INVESTMENT AND OTHER INCOME:</b>										
Net Investment Gain (Loss)	722	543	437	385	390	432	530	726	1,040	1,490
Other Income	0	0	0	0	0	0	0	0	0	0
Subtotal	722	543	437	385	390	432	530	726	1,040	1,490
<b>NET INCOME</b>	<b>9,631</b>	<b>9,102</b>	<b>8,678</b>	<b>16,465</b>	<b>16,630</b>	<b>16,835</b>	<b>17,097</b>	<b>17,458</b>	<b>17,939</b>	<b>18,559</b>

<b>CAPITAL AND SURPLUS ACCOUNT:</b>										
Beginning Surplus	(138,430)	(128,799)	(119,697)	(111,019)	(94,554)	(77,923)	(61,088)	(43,991)	(26,533)	(8,593)

<b>SURPLUS CHANGES:</b>										
Net Income	9,631	9,102	8,678	16,465	16,630	16,835	17,097	17,458	17,939	18,559
Other Changes	0	0	0	0	0	0	0	0	0	0
Subtotal	9,631	9,102	8,678	16,465	16,630	16,835	17,097	17,458	17,939	18,559
Ending Surplus	(128,799)	(119,697)	(111,019)	(94,554)	(77,923)	(61,088)	(43,991)	(26,533)	(8,593)	9,966



DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
INCOME STATEMENT (\$000's)

APPENDIX B  
EXHIBIT 1  
SHEET 2

	Year Ending 2011	Year Ending 2012	Year Ending 2013	Year Ending 2014	Year Ending 2015	Year Ending 2016	Year Ending 2017	Year Ending 2018	Year Ending 2019	Year Ending 2020
<b>UNDERWRITING INCOME:</b>										
Environmental Impact Fee	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855
Total Underwriting Revenue	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855
<b>UNDERWRITING DEDUCTIONS:</b>										
Losses Incurred - SUPERB	0	0	0	0	0	0	0	0	0	0
Losses Incurred - SFRF	0	0	0	0	0	0	0	0	0	0
Total Underwriting Deductions	0	0	0	0	0	0	0	0	0	0
<b>NET UNDERWRITING GAIN (LOSS)</b>	<b>17,240</b>	<b>17,412</b>	<b>17,586</b>	<b>17,762</b>	<b>17,940</b>	<b>18,119</b>	<b>18,300</b>	<b>18,483</b>	<b>18,668</b>	<b>18,855</b>

<b>INVESTMENT AND OTHER INCOME:</b>										
Net Investment Gain (Loss)	2,085	2,788	3,589	4,490	5,475	6,539	7,686	8,920	10,247	11,667
Other Income	0	0	0	0	0	0	0	0	0	0
Subtotal	2,085	2,788	3,589	4,490	5,475	6,539	7,686	8,920	10,247	11,667
<b>NET INCOME</b>	<b>19,325</b>	<b>20,200</b>	<b>21,175</b>	<b>22,252</b>	<b>23,414</b>	<b>24,658</b>	<b>25,986</b>	<b>27,404</b>	<b>28,915</b>	<b>30,522</b>

<b>CAPITAL AND SURPLUS ACCOUNT:</b>										
Beginning Surplus	9,966	29,290	49,490	70,665	92,917	116,332	140,989	166,975	194,379	223,294

<b>SURPLUS CHANGES:</b>										
Net Income	19,325	20,200	21,175	22,252	23,414	24,658	25,986	27,404	28,915	30,522
Other Changes	0	0	0	0	0	0	0	0	0	0
Subtotal	19,325	20,200	21,175	22,252	23,414	24,658	25,986	27,404	28,915	30,522
Ending Surplus	29,290	49,490	70,665	92,917	116,332	140,989	166,975	194,379	223,294	253,816

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
INCOME STATEMENT (\$000's)

APPENDIX B  
EXHIBIT 1  
SHEET 3

	Year Ending 2021	Year Ending 2022	Year Ending 2023	Year Ending 2024	Year Ending 2025	Year Ending 2026
<b>UNDERWRITING INCOME:</b>						
Environmental Impact Fee	19,043	19,234	19,426	19,620	19,817	20,015
Total Underwriting Revenue	19,043	19,234	19,426	19,620	19,817	20,015
<b>UNDERWRITING DEDUCTIONS:</b>						
Losses Incurred - SUPERB	0	0	0	0	0	0
Losses Incurred - SFRF	0	0	0	0	0	0
Total Underwriting Deductions	0	0	0	0	0	0
<b>NET UNDERWRITING GAIN (LOSS)</b>	<b>19,043</b>	<b>19,234</b>	<b>19,426</b>	<b>19,620</b>	<b>19,817</b>	<b>20,015</b>
<b>INVESTMENT AND OTHER INCOME:</b>						
Net Investment Gain (Loss)	13,178	14,785	16,488	18,289	20,189	22,195
Other Income	0	0	0	0	0	0
Subtotal	13,178	14,785	16,488	18,289	20,189	22,195
<b>NET INCOME</b>	<b>32,222</b>	<b>34,019</b>	<b>35,915</b>	<b>37,909</b>	<b>40,006</b>	<b>42,209</b>
<b>CAPITAL AND SURPLUS ACCOUNT:</b>						
Beginning Surplus	253,816	286,037	320,056	355,970	393,880	433,886
<b>SURPLUS CHANGES:</b>						
Net Income	32,222	34,019	35,915	37,909	40,006	42,209
Other Changes	0	0	0	0	0	0
Subtotal	32,222	34,019	35,915	37,909	40,006	42,209
Ending Surplus	286,037	320,056	355,970	393,880	433,886	476,095

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
BALANCE SHEET FORECASTS (\$000's)

	As of Year End 2000	As of Year End 2001	As of Year End 2002	As of Year End 2003	As of Year End 2004	As of Year End 2005	As of Year End 2006	As of Year End 2007	As of Year End 2008	As of Year End 2009
<b>ASSETS:</b>										
Invested Assets	17,212	12,407	9,865	8,048	7,753	8,220	9,497	12,239	17,521	25,098
Other Assets	0	0	0	0	0	0	0	0	0	0
<b>Total Assets</b>	<b>17,212</b>	<b>12,407</b>	<b>9,865</b>	<b>8,048</b>	<b>7,753</b>	<b>8,220</b>	<b>9,497</b>	<b>12,239</b>	<b>17,521</b>	<b>25,098</b>

**LIABILITIES AND SURPLUS:**

Loss Reserves - SUPERB Current Liab	155,110	134,140	115,686	98,291	82,877	68,521	54,957	42,498	32,025	23,232
Loss Reserves - SUPERB Future Claim	0	6,607	13,492	20,459	19,171	17,422	15,487	13,642	11,980	10,434
Loss Reserves - SFRF Current Liab	533	456	376	305	248	191	133	83	43	20
Loss Reserves - SFRF Future Claims	0	4	7	11	11	10	9	8	7	6
<b>Subtotal - Loss Reserves</b>	<b>155,643</b>	<b>141,206</b>	<b>129,561</b>	<b>119,066</b>	<b>102,307</b>	<b>86,143</b>	<b>70,586</b>	<b>56,230</b>	<b>44,054</b>	<b>33,692</b>
Loss Adjustment Expense Reserves	0	0	0	0	0	0	0	0	0	0
Unearned Premium Reserves	0	0	0	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0	0	0	0
<b>Total Liabilities</b>	<b>155,643</b>	<b>141,206</b>	<b>129,561</b>	<b>119,066</b>	<b>102,307</b>	<b>86,143</b>	<b>70,586</b>	<b>56,230</b>	<b>44,054</b>	<b>33,692</b>
<b>Surplus</b>	<b>(138,430)</b>	<b>(128,799)</b>	<b>(119,697)</b>	<b>(111,019)</b>	<b>(94,554)</b>	<b>(77,923)</b>	<b>(61,088)</b>	<b>(43,991)</b>	<b>(26,533)</b>	<b>(8,593)</b>
<b>Total Liabilities And Surplus</b>	<b>17,212</b>	<b>12,407</b>	<b>9,865</b>	<b>8,048</b>	<b>7,753</b>	<b>8,220</b>	<b>9,497</b>	<b>12,239</b>	<b>17,521</b>	<b>25,098</b>

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SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
BALANCE SHEET FORECASTS (\$000's)

APPENDIX B  
EXHIBIT 2  
SHEET 2

	As of Year End 2010	As of Year End 2011	As of Year End 2012	As of Year End 2013	As of Year End 2014	As of Year End 2015	As of Year End 2016	As of Year End 2017	As of Year End 2018	As of Year End 2019
<b>ASSETS:</b>										
Invested Assets	35,986	49,504	64,802	82,337	101,743	122,723	145,361	169,751	195,986	224,147
Other Assets	0	0	0	0	0	0	0	0	0	0
<b>Total Assets</b>	<b>35,986</b>	<b>49,504</b>	<b>64,802</b>	<b>82,337</b>	<b>101,743</b>	<b>122,723</b>	<b>145,361</b>	<b>169,751</b>	<b>195,986</b>	<b>224,147</b>
<b>LIABILITIES AND SURPLUS:</b>										
Loss Reserves - SUPERB Current Liab	17,305	13,300	9,994	7,318	5,056	3,205	1,769	757	171	0
Loss Reserves - SUPERB Future Claim	8,700	6,906	5,315	4,351	3,768	3,185	2,602	2,019	1,436	852
Loss Reserves - SFRF Current Liab	10	3	0	0	0	0	0	0	0	0
Loss Reserves - SFRF Future Claims	5	4	3	2	2	2	1	1	1	0
<b>Subtotal - Loss Reserves</b>	<b>26,020</b>	<b>20,213</b>	<b>15,312</b>	<b>11,672</b>	<b>8,826</b>	<b>6,392</b>	<b>4,372</b>	<b>2,776</b>	<b>1,607</b>	<b>853</b>
Loss Adjustment Expense Reserves	0	0	0	0	0	0	0	0	0	0
Unearned Premium Reserves	0	0	0	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0	0	0	0
<b>Total Liabilities</b>	<b>26,020</b>	<b>20,213</b>	<b>15,312</b>	<b>11,672</b>	<b>8,826</b>	<b>6,392</b>	<b>4,372</b>	<b>2,776</b>	<b>1,607</b>	<b>853</b>
<b>Surplus</b>	<b>9,966</b>	<b>29,290</b>	<b>49,490</b>	<b>70,665</b>	<b>92,917</b>	<b>116,332</b>	<b>140,989</b>	<b>166,975</b>	<b>194,379</b>	<b>223,294</b>
<b>Total Liabilities And Surplus</b>	<b>35,986</b>	<b>49,504</b>	<b>64,802</b>	<b>82,337</b>	<b>101,743</b>	<b>122,723</b>	<b>145,361</b>	<b>169,751</b>	<b>195,986</b>	<b>224,147</b>

DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
BALANCE SHEET FORECASTS (\$000's)

	As of Year End 2020	As of Year End 2021	As of Year End 2022	As of Year End 2023	As of Year End 2024	As of Year End 2025	As of Year End 2026
<b>ASSETS:</b>							
Invested Assets	254,191	286,124	320,056	355,970	393,880	433,886	476,095
Other Assets	0	0	0	0	0	0	0
<b>Total Assets</b>	<b>254,191</b>	<b>286,124</b>	<b>320,056</b>	<b>355,970</b>	<b>393,880</b>	<b>433,886</b>	<b>476,095</b>
<b>LIABILITIES AND SURPLUS:</b>							
Loss Reserves - SUPERB Current Liab	0	0	0	0	0	0	0
Loss Reserves - SUPERB Future Claim	375	86	0	0	0	0	0
Loss Reserves - SFRF Current Liab	0	0	0	0	0	0	0
Loss Reserves - SFRF Future Claims	0	0	0	0	0	0	0
<b>Subtotal - Loss Reserves</b>	<b>375</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Loss Adjustment Expense Reserves	0	0	0	0	0	0	0
Unearned Premium Reserves	0	0	0	0	0	0	0
Other Liabilities	0	0	0	0	0	0	0
<b>Total Liabilities</b>	<b>375</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Surplus</b>	<b>253,816</b>	<b>286,037</b>	<b>320,056</b>	<b>355,970</b>	<b>393,880</b>	<b>433,886</b>	<b>476,095</b>
<b>Total Liabilities And Surplus</b>	<b>254,191</b>	<b>286,124</b>	<b>320,056</b>	<b>355,970</b>	<b>393,880</b>	<b>433,886</b>	<b>476,095</b>

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## DHEC

**SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)**

APPENDIX B  
EXHIBIT 3  
SHEET 1a

	Year Ending 2001	Year Ending 2002	Year Ending 2003	Year Ending 2004	Year Ending 2005	Year Ending 2006	Year Ending 2007	Year Ending 2008	Year Ending 2009	Year Ending 2010
<b>A. Starting Invested Assets</b>	17,212	12,407	9,865	8,048	7,753	8,220	9,497	12,239	17,521	25,098
<b>B. Payout Of Reserves As Of 12/31/00</b>										
1. SUPERB	(20,970)	(18,454)	(17,395)	(15,413)	(14,357)	(13,564)	(12,459)	(10,473)	(8,793)	(5,927)
2. SFRF	(77)	(80)	(71)	(57)	(57)	(57)	(50)	(40)	(23)	(10)
3. Subtotal	(21,047)	(18,534)	(17,466)	(15,471)	(14,414)	(13,621)	(12,509)	(10,513)	(8,816)	(5,936)
<b>C. Payout Of Future Claims</b>										
1. SUPERB	(87)	(315)	(708)	(1,289)	(1,748)	(1,935)	(1,845)	(1,662)	(1,546)	(1,734)
2. SFRF	(0)	(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
3. Subtotal	(87)	(315)	(708)	(1,289)	(1,749)	(1,936)	(1,846)	(1,663)	(1,546)	(1,735)
<b>D. Total Cash Outflow</b>	(21,134)	(18,849)	(18,174)	(16,760)	(16,163)	(15,558)	(14,356)	(12,176)	(10,362)	(7,671)
<b>E. Cash Inflow</b>										
1. Funds Collected	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069
2. Investment Income	722	543	437	385	390	432	530	726	1,040	1,490
3. Subtotal	16,329	16,306	16,357	16,465	16,630	16,835	17,097	17,458	17,939	18,559
<b>F. Net Cash Flow</b>	(4,805)	(2,543)	(1,817)	(295)	467	1,278	2,741	5,283	7,577	10,887
<b>G. Ending Assets</b>	12,407	9,865	8,048	7,753	8,220	9,497	12,239	17,521	25,098	35,986

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## DHEC

## SUPERB FUNDS

PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)APPENDIX B  
EXHIBIT 3  
SHEET 2a

	Year Ending 2011	Year Ending 2012	Year Ending 2013	Year Ending 2014	Year Ending 2015	Year Ending 2016	Year Ending 2017	Year Ending 2018	Year Ending 2019	Year Ending 2020
A. Starting Invested Assets	35,986	49,504	64,802	82,337	101,743	122,723	145,361	169,751	195,986	224,147
B. Payout Of Reserves As Of 12/31/00										
1. SUPERB	(4,005)	(3,306)	(2,676)	(2,262)	(1,851)	(1,437)	(1,012)	(586)	(171)	0
2. SFRF	(7)	(3)	0	0	0	0	0	0	0	0
3. Subtotal	(4,012)	(3,309)	(2,676)	(2,262)	(1,851)	(1,437)	(1,012)	(586)	(171)	0
C. Payout Of Future Claims										
1. SUPERB	(1,794)	(1,591)	(964)	(583)	(583)	(583)	(583)	(583)	(583)	(477)
2. SFRF	(1)	(1)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
3. Subtotal	(1,795)	(1,592)	(965)	(583)	(583)	(583)	(583)	(583)	(583)	(478)
D. Total Cash Outflow	(5,807)	(4,901)	(3,640)	(2,846)	(2,434)	(2,020)	(1,595)	(1,169)	(754)	(478)
E. Cash Inflow										
1. Funds Collected	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855
2. Investment Income	2,085	2,788	3,589	4,490	5,475	6,539	7,686	8,920	10,247	11,667
3. Subtotal	19,325	20,200	21,175	22,252	23,414	24,658	25,986	27,404	28,915	30,522
F. Net Cash Flow	13,518	15,299	17,534	19,406	20,980	22,638	24,390	26,234	28,161	30,044
G. Ending Assets	49,504	64,802	82,337	101,743	122,723	145,361	169,751	195,986	224,147	254,191

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

	Year Ending 2021	Year Ending 2022	Year Ending 2023	Year Ending 2024	Year Ending 2025	Year Ending 2026
A. Starting Invested Assets	254,191	286,124	320,056	355,970	393,880	433,886
B. Payout Of Reserves As Of 12/31/00						
1. SUPERB	0	0	0	0	0	0
2. SFRF	0	0	0	0	0	0
3. Subtotal	0	0	0	0	0	0
C. Payout Of Future Claims						
1. SUPERB	(289)	(86)	0	0	0	0
2. SFRF	(0)	(0)	0	0	0	0
3. Subtotal	(289)	(86)	0	0	0	0
D. Total Cash Outflow	(289)	(86)	0	0	0	0
E. Cash Inflow						
1. Funds Collected	19,043	19,234	19,426	19,620	19,817	20,015
2. Investment Income	13,178	14,785	16,488	18,289	20,189	22,195
3. Subtotal	32,222	34,019	35,915	37,909	40,006	42,209
F. Net Cash Flow	31,933	33,932	35,915	37,909	40,006	42,209
G. Ending Assets	286,124	320,056	355,970	393,880	433,886	476,095

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

APPENDIX B  
EXHIBIT 3  
SHEET 1b

	Year Ending 2001	Year Ending 2002	Year Ending 2003	Year Ending 2004	Year Ending 2005	Year Ending 2006	Year Ending 2007	Year Ending 2008	Year Ending 2009	Year Ending 2010
<b>A. INVESTED ASSETS</b>										
1. Starting Invested Assets	17,212	12,407	9,865	8,048	7,753	8,220	9,497	12,239	17,521	25,098
2. Average Yield Of Assets	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
3. Average # Of Months Held	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
4. Investment Income	861	620	493	402	388	411	475	612	876	1,255
<b>B. COLLECTED PREMIUM AND FEES</b>										
1. Environmental Impact Fee	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069
2. Others	0	0	0	0	0	0	0	0	0	0
3. Total Funds Collected	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069
4. Average # Of Months Held	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income	390	394	398	402	406	410	414	418	422	427
6. Funds Collected From Prior Yr	0	0	0	0	0	0	0	0	0	0
7. Average # Of Months Held	9.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Investment Income	0	0	0	0	0	0	0	0	0	0
9. Total Investment Income	390	394	398	402	406	410	414	418	422	427
10. Total Funds Collected During Yr	15,607	15,763	15,921	16,080	16,241	16,403	16,567	16,733	16,900	17,069

NOTES:

- A1. - For yr 2002 on, use D6. of prior yr  
A4. = A1. x A2. x A3. / 12  
B3. = B1. + B2.  
B5. = B3. x A2. x B4. / 12  
B8. = B6. x A2. x B7. / 12  
B9. = B5. + B8.  
B10. = B3. + B6.

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

APPENDIX B  
EXHIBIT 3  
SHEET 2b

	Year Ending 2011	Year Ending 2012	Year Ending 2013	Year Ending 2014	Year Ending 2015	Year Ending 2016	Year Ending 2017	Year Ending 2018	Year Ending 2019	Year Ending 2020
<b>A. INVESTED ASSETS</b>										
1. Starting Invested Assets	35,986	49,504	64,802	82,337	101,743	122,723	145,361	169,751	195,986	224,147
2. Average Yield Of Assets	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
3. Average # Of Months Held	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
4. Investment Income	1,799	2,475	3,240	4,117	5,087	6,136	7,268	8,488	9,799	11,207
<b>B. COLLECTED PREMIUM AND FEES</b>										
1. Environmental Impact Fee	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855
2. Others	0	0	0	0	0	0	0	0	0	0
3. Total Funds Collected	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855
4. Average # Of Months Held	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income	431	435	440	444	448	453	458	462	467	471
6. Funds Collected From Prior Yr	0	0	0	0	0	0	0	0	0	0
7. Average # Of Months Held	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. Investment Income	0	0	0	0	0	0	0	0	0	0
9. Total Investment Income	431	435	440	444	448	453	458	462	467	471
10. Total Funds Collected During Yr	17,240	17,412	17,586	17,762	17,940	18,119	18,300	18,483	18,668	18,855

NOTES:

- A1. - For yr 2002 on, use D6. of prior yr  
A4. = A1. x A2. x A3. / 12  
B3. = B1. + B2.  
B5. = B3. x A2. x B4. / 12  
B8. = B6. x A2. x B7. / 12  
B9. = B5. + B8.  
B10. = B3. + B6.

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

**A. INVESTED ASSETS**

	Year Ending 2021	Year Ending 2022	Year Ending 2023	Year Ending 2024	Year Ending 2025	Year Ending 2026
1. Starting Invested Assets	254,191	286,124	320,056	355,970	393,880	433,886
2. Average Yield Of Assets	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
3. Average # Of Months Held	12.0	12.0	12.0	12.0	12.0	12.0
4. Investment Income	12,710	14,306	16,003	17,799	19,694	21,694

**B. COLLECTED PREMIUM AND FEES**

1. Environmental Impact Fee	19,043	19,234	19,426	19,620	19,817	20,015
2. Others	0	0	0	0	0	0
3. Total Funds Collected	19,043	19,234	19,426	19,620	19,817	20,015
4. Average # Of Months Held	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income	476	481	486	491	495	500
6. Funds Collected From Prior Yr	0	0	0	0	0	0
7. Average # Of Months Held	0.0	0.0	0.0	0.0	0.0	0.0
8. Investment Income	0	0	0	0	0	0
9. Total Investment Income	476	481	486	491	495	500
10. Total Funds Collected During Yr	19,043	19,234	19,426	19,620	19,817	20,015

**NOTES:**

- A1. - For yr 2002 on, use D6. of prior yr  
A4. = A1. x A2. x A3. / 12  
B3. = B1. + B2.  
B5. = B3. x A2. x B4. / 12  
B8. = B6. x A2. x B7. / 12  
B9. = B5. + B8.  
B10. = B3. + B6.

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

	Year Ending 2001	Year Ending 2002	Year Ending 2003	Year Ending 2004	Year Ending 2005	Year Ending 2006	Year Ending 2007	Year Ending 2008	Year Ending 2009	Year Ending 2010
<b>C. OTHER CASH OUT(-) OR IN(+)</b>										
1. Expenses	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Paid Losses	0	0	0	0	0	0	0	0	0	0
a. SUPERB	(21,057)	(18,769)	(18,103)	(16,702)	(16,105)	(15,499)	(14,304)	(12,135)	(10,339)	(7,661)
b. SFRF	(77)	(80)	(71)	(58)	(58)	(58)	(51)	(41)	(24)	(11)
c. Total Paid Losses	(21,134)	(18,849)	(18,174)	(16,760)	(16,163)	(15,558)	(14,356)	(12,176)	(10,362)	(7,671)
3. Total Other Cash	(21,134)	(18,849)	(18,174)	(16,760)	(16,163)	(15,558)	(14,356)	(12,176)	(10,362)	(7,671)
4. Average # Of Months Not Held	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income Gain (Loss)	(528)	(471)	(454)	(419)	(404)	(389)	(359)	(304)	(259)	(192)

**D. TOTAL INVESTMENT INC. & ASSETS**

1. Total Investment Income	722	543	437	385	390	432	530	726	1,040	1,490
2. Nth Year Cash	(5,527)	(3,086)	(2,254)	(680)	77	845	2,211	4,557	6,538	9,397
3. Capital Paid In	0	0	0	0	0	0	0	0	0	0
4. Other Adjustments	0	0	0	0	0	0	0	0	0	0
5. Subtotal	(4,805)	(2,543)	(1,817)	(295)	467	1,278	2,741	5,283	7,577	10,887
6. Total Invested Assets (End Of Year N)	12,407	9,865	8,048	7,753	8,220	9,497	12,239	17,521	25,098	35,986

NOTES:

C3 = C1. + C2c.  
C5 = C3. x A2. x C4. / 12  
D1 = A4. + B9. + C5.  
D2 = B10. + C3.  
D6 = A1. + D5.

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

	Year Ending 2011	Year Ending 2012	Year Ending 2013	Year Ending 2014	Year Ending 2015	Year Ending 2016	Year Ending 2017	Year Ending 2018	Year Ending 2019	Year Ending 2020
<b>C. OTHER CASH OUT(-) OR IN(+)</b>										
1. Expenses	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Paid Losses	0	0	0	0	0	0	0	0	0	0
a. SUPERB	(5,799)	(4,897)	(3,640)	(2,845)	(2,434)	(2,020)	(1,595)	(1,169)	(754)	(477)
b. SFRF	(8)	(4)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
c. Total Paid Losses	(5,807)	(4,901)	(3,640)	(2,846)	(2,434)	(2,020)	(1,595)	(1,169)	(754)	(478)
3. Total Other Cash	(5,807)	(4,901)	(3,640)	(2,846)	(2,434)	(2,020)	(1,595)	(1,169)	(754)	(478)
4. Average # Of Months Not Held	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income Gain (Loss)	(145)	(123)	(91)	(71)	(61)	(50)	(40)	(29)	(19)	(12)
<b>D. TOTAL INVESTMENT INC. &amp; ASSETS</b>										
1. Total Investment Income	2,085	2,788	3,589	4,490	5,475	6,539	7,686	8,920	10,247	11,667
2. Nth Year Cash	11,433	12,511	13,946	14,916	15,506	16,099	16,705	17,314	17,914	18,377
3. Capital Paid In	0	0	0	0	0	0	0	0	0	0
4. Other Adjustments	0	0	0	0	0	0	0	0	0	0
5. Subtotal	13,518	15,299	17,534	19,406	20,980	22,638	24,390	26,234	28,161	30,044
6. Total Invested Assets (End Of Year N)	49,504	64,802	82,337	101,743	122,723	145,361	169,751	195,986	224,147	254,191

NOTES:

- C3 = C1. + C2c.  
C5 = C3. x A2. x C4. / 12  
D1 = A4. + B9. + C5.  
D2 = B10. + C3.  
D6 = A1. + D5.

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DHEC  
SUPERB FUNDS  
PRO FORMA FINANCIAL PROJECTIONS  
CASH FLOW CALCULATIONS (\$000's)

**C. OTHER CASH OUT(-) OR IN(+)**

	Year Ending 2021	Year Ending 2022	Year Ending 2023	Year Ending 2024	Year Ending 2025	Year Ending 2026
1. Expenses	NA	NA	NA	NA	NA	NA
2. Paid Losses	0	0	0	0	0	0
a. SUPERB	(289)	(86)	0	0	0	0
b. SFRF	(0)	(0)	0	0	0	0
c. Total Paid Losses	(289)	(86)	0	0	0	0
3. Total Other Cash	(289)	(86)	0	0	0	0
4. Average # Of Months Not Held	6.0	6.0	6.0	6.0	6.0	6.0
5. Investment Income Gain (Loss)	(7)	(2)	0	0	0	0

**D. TOTAL INVESTMENT INC. & ASSETS**

1. Total Investment Income	13,178	14,785	16,488	18,289	20,189	22,195
2. Nth Year Cash	18,755	19,147	19,426	19,620	19,817	20,015
3. Capital Paid In	0	0	0	0	0	0
4. Other Adjustments	0	0	0	0	0	0
5. Subtotal	31,933	33,932	35,915	37,909	40,006	42,209
6. Total Invested Assets (End Of Year N)	286,124	320,056	355,970	393,880	433,886	476,095

NOTES:

C3. = C1. + C2c.  
C5. = C3. x A2. x C4. / 12  
D1. = A4. + B9. + C5.  
D2. = B10. + C3.  
D6. = A1. + D5.

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## APPENDIX C

### PROJECTION OF DHEC REVENUES

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# **DESCRIPTION OF APPENDIX C**

## **PROJECTION OF DHEC REVENUES**

This appendix presents our projection of DHEC revenues used to support the Superb account and the SFRF.

### **Exhibit 1**

Exhibit 1 shows our projection of DHEC's revenues for report years 2001 through 2026. We assume the half cent per gallon environmental impact fees will remain. A 1.0% annual percentage change in total impact fees to be collected is selected to reflect increased fuel consumption.

Per DHEC's request, we projected revenues for report years through 2026, even though we assumed DHEC will not provide coverage for leaks reported in 2004 and beyond.

### **Exhibit 2**

Exhibit 2 shows DHEC's historical receipts by fiscal year.

Note that we include annual impact fees as the sole source of funding for the Superb Account and SFRF:

- It is our understanding that the \$100 per tank registration fee is used for expenses related to the administration of DHEC and not for paying claims. We therefore excluded the registration fee in our projection of revenues for the Funds.
- Interest income is not shown here; instead, it is calculated and incorporated in the proforma statements in Appendix B as investment income.



- Other sources of income such as penalties constitute a very small portion of DHEC's income and are therefore not included in our projection of revenues. We believe exclusion of these income sources would not affect our results materially.

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#### Description of Appendix C - Page 2

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## PROJECTION OF REVENUES

(A)	(B)	(C)
Report Year	Selected Annual % change	Projected Total Revenues
2000		\$15,452,322
2001	1.0%	15,606,845
2002	1.0%	15,762,914
2003	1.0%	15,920,543
2004	1.0%	16,079,748
2005	1.0%	16,240,546
2006	1.0%	16,402,951
2007	1.0%	16,566,981
2008	1.0%	16,732,650
2009	1.0%	16,899,977
2010	1.0%	17,068,977
2011	1.0%	17,239,666
2012	1.0%	17,412,063
2013	1.0%	17,586,184
2014	1.0%	17,762,046
2015	1.0%	17,939,666
2016	1.0%	18,119,063
2017	1.0%	18,300,253
2018	1.0%	18,483,256
2019	1.0%	18,668,088
2020	1.0%	18,854,769
2021	1.0%	19,043,317
2022	1.0%	19,233,750
2023	1.0%	19,426,088
2024	1.0%	19,620,349
2025	1.0%	19,816,552
2026	1.0%	20,014,718
Total 2001-2026		\$460,801,959

## NOTES:

(B) - Selected based on judgment

(C) = Prior (C) x [ 1 + (B) ]

Revenues for 2000 adjusted from Exhibit 2 to reflect report year running from 1/1/00 to 12/31/00

## HISTORY OF REVENUES

(A)	(B)	(C)	(D)	(E)
Fiscal Year	Annual Receipts	Annual % change	Annual Impact Fees	% of Impact Fees in Receipts
1989	\$1,025,426		NA	
1990	1,982,532	93.3%	NA	
1991	14,075,890	610.0%	NA	
1992	7,971,710	-43.4%	NA	
1993	5,414,839	-32.1%	NA	
1994	15,441,119	185.2%	NA	
1995	14,641,629	-5.2%	NA	
1996	13,587,564	-7.2%	13,280,156	97.7%
1997	14,764,464	8.7%	14,120,654	95.6%
1998	15,601,287	5.7%	14,299,729	91.7%
1999	16,097,619	3.2%	15,125,818	94.0%
2000	16,362,252	1.6%	15,778,826	96.4%
Total	\$136,966,332		NA	
Total Last 5	\$76,413,186		\$72,605,183	
Total Last 3	\$48,061,158		\$45,204,373	
Avg Last 5	\$15,282,637		\$14,521,037	
Avg Last 3	\$16,020,386		\$15,068,124	

## NOTES:

(A) - Fiscal Year from July 1 through June 30

(B) - The source of the receipts is financial statements provided by DHEC; receipts include impact fee, interest, penalties etc

(C) = (B) / Prior (B) - 1

(D) - The source of impact fee is the State of South Carolina, Department of Revenue

(E) = (D) / (B)

**PROJECTION OF SITE REHABILITATION (SUPERB ACCOUNT) LOSSES**

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# **DESCRIPTION OF APPENDIX D**

## **PROJECTION OF SITE REHABILITATION (SUPERB ACCOUNT) LOSSES**

This appendix presents our projection of site rehabilitation or "Superb Account" losses. Unless otherwise noted, releases from all tanks are used in our analysis.

This appendix is divided into sections as follows:

### **SUMMARY**

This exhibit summarizes our projection of future clean up losses on a report year basis based on number of confirmed releases and average severity projected in Sections I and II, respectively. The projected future losses in Column (D) are used in our proforma in Appendices A and B.

### **SECTION I**

This section calculates the projected number of confirmed releases used in the summary exhibit mentioned above.

#### **Exhibit 1**

Exhibit 1, Sheet 1 calculates the projected number of confirmed releases based on a selected annual confirmed releases frequency and a projected number of existing tanks.

Note that our definition of confirmed releases and frequency in this study has changed from last year. In our last study, counts for releases without payment were not available, and we therefore calculated frequency based on all releases, with and without payment. For this study, we were provided with a release database which allows us to determine the number of releases with payment. We therefore calculated frequency based only on releases with payment. As a result of this change in release count, our calculated frequency is not directly

comparable to that of last year. It should be noted that this change in definition of release count also affects the calculation of severity.

Exhibit 1, Sheet 2 shows the historical frequency by report year using releases from all tanks. As shown in column (D), historical confirmed releases frequency ranges from 0.57% to 2.97%, with an average of about 1.30%.

Based on our discussion with DHEC, it is believed that many of the historical releases relate to tanks that do not meet the 1998 upgrade standard. These substandard tanks are subsequently either upgraded to meet the standard or are no longer in use. As a result, DHEC believes historical frequencies may not be a good indication of future frequencies. To facilitate our analysis on future frequencies, DHEC provided us with data on releases from tanks that meet the 1998 upgraded standard. This information is summarized in Exhibit 1, Sheet 3 which shows the historical frequency by report year using releases from permitted or upgraded tanks only. As shown in column (D), historical confirmed releases frequency ranges from 0.24% to 1.20%, with an average of about 0.39%. Given this additional information, we selected a frequency of 0.40%.

DHEC believes that this improvement in frequency will continue in future years since these upgraded tanks will be closely monitored and inspected. Therefore, any needed repairs or shutdowns will occur on a regular basis. It should be noted that if the tanks were not closely monitored and inspected as assumed, frequencies could deteriorate.

## **Exhibit 2**

Exhibit 2, Sheet 1 calculates our projection of existing tanks which is the basis for frequency and projected confirmed releases calculation. Exhibit 2, Sheet 2 shows the historical number of tanks by EPA fiscal quarter.

## **SECTION II**

This section calculates the projected average severity used in the summary exhibit mentioned above.

Description of Appendix D - Page 2

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## Exhibit 1

Exhibit 1, Sheet 1 calculates the projected average severity by report year based on the selected average severity for year 2000 and a selected annual average severity trend. Inflation is accounted for in the selected annual average severity trend.

Like frequencies, the severities in our study this year are based on confirmed releases with payment.

Exhibit 1, Sheet 2 shows the historical average severity based on releases from all tanks by report year. As shown in column (H), there is a wide range of historical average severities from \$54,000 to \$217,000 approximately.

As discussed in the description of Section 1, Exhibit 1 above, we were provided with data on releases from tanks that meet the 1998 upgraded standard. In Exhibit 1, Sheet 3, we calculated average severities based on this information on releases from permitted or upgraded tanks only. Again, as shown in column (H), there is a wide range of historical average severities from \$39,000 to \$342,000 approximately.

As shown in Exhibit 1, Sheet 3, severities for the more recent years appear to be higher than those for earlier years. These recent years are still relatively immature, and are subject to very large development factors. It should be noted that the same set of development factors developed from releases based on all tanks was applied to losses from upgraded tanks.

Taking into account such considerations as amnesty periods and the pay-for-performance program, we selected an average severity of \$150,000. Unlike our last study, this selected severity is on a gross of deductible basis. Based on this gross of deductible severity, we estimated severities for different deductible assumptions for various scenarios in Appendix A, as well as severities net of \$25,000 deductible for our proforma analysis for the Funds in Appendix B.

## Exhibit 2

Exhibit 2, Sheet 1 shows our selection of ultimate losses for historical years 1988 through 2000 based on various methods. Also displayed is the selected total reserves for those years and shown as current liabilities in the proforma statements in Appendix B.

Exhibit 2, Sheet 2 shows diagnostics such as pure premium and untrended average severity based on the selected ultimate losses in Sheet 1 of this exhibit. These diagnostics enable us to test the reasonableness of our selection.

## Exhibit 3

Exhibit 3 shows the loss development method.

Sheet 1 shows loss development method using paid losses net of deductible, Sheet 2 using paid losses gross of deductible, and Sheet 3 using deductible losses.

For each set of sheets, Sheet a shows the losses in a triangle format by report year and evaluation point, Sheet b shows the corresponding loss development factors and the selected pattern, and Sheet c shows the projection of ultimate losses based on the selected pattern in Sheet b.

Losses for report years 88, 89, and 91 through 93 were shaded to denote amnesty periods. Larger volume of losses is observed for these years possibly because of the absence of deductibles.

## Exhibit 4

This exhibit shows our Bornhuetter-Ferguson method. An a priori ultimate loss of \$15 million was judgmentally selected for all years based on the experience of the earlier and more mature years as well as input from DHEC. We do not trend this a priori ultimate loss for the more recent years to account for the possibly more favorable experience for those years.



The result of this method is highly dependent on the a priori loss assumption. In selecting this amount, we consider ultimate losses and revenues for prior report years. Diagnostics from the resulting methodology, other methodologies as well as discussion with DHEC lead us to conclude that \$15 million is a reasonable a priori ultimate loss.

The Bornhuetter-Ferguson method is particularly valuable (as compared to the paid loss development method) for addressing the immaturity of the latest years. Therefore, as shown in column (F) of Section II, Exhibit 2, Sheet 1, we base our selection of ultimate losses on this method for years 1994 through 2000.

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Description of Appendix D - Page 5

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**PROJECTION OF FUTURE SUPERB ACCOUNT LOSSES  
GROSS OF DEDUCTIBLE**

(A)	(B)	(C)	(D)
Report Year	Projected Total Number of Confirmed Releases	Projected Average Severity	Estimated Report Year Ultimate Losses
2000			
2001	51	\$156,000	\$7,971,591
2002	52	162,240	8,511,221
2003	53	168,730	9,010,419
2004	54	175,479	9,512,021
2005	55	182,498	10,041,297
2006	56	189,798	10,639,653
2007	57	197,390	11,287,420
2008	58	205,285	11,975,012
2009	60	213,497	12,704,408
2010	61	222,037	13,477,890
2011	62	230,918	14,298,871
2012	63	240,155	15,169,724
2013	64	249,761	16,093,174
2014	66	259,751	17,073,265
2015	67	270,142	18,112,838
2016	68	280,947	19,216,137
2017	70	292,185	20,386,370
2018	71	303,872	21,628,294
2019	73	316,027	22,945,528
2020	74	328,668	24,343,407
2021	76	341,815	25,826,014
2022	77	355,488	27,399,329
2023	79	369,707	29,067,955
2024	80	384,496	30,838,598
2025	82	399,875	32,716,448
2026	83	415,870	34,709,022
Total 2001-2026	1,713		\$474,955,904

**NOTES:**

(B) - See Appendix D, Section I, Exhibit 1, Sheet 1, Column (E)

(C) - See Appendix D, Section II, Exhibit 1, Sheet 1, Column (C)

(D) = (B) x (C)

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## PROJECTION OF CONFIRMED RELEASE FREQUENCIES

(A)	(B)	(C)	(D)	(E)
Report Year	Selected Annual Frequency Trend	Selected Annual Confirmed Releases Frequency	Projected Number of Existing Petroleum UST Systems	Projected Total Number of Confirmed Releases
2000		0.4%		
2001	1.0%	0.4%	12,649	51
2002	1.0%	0.4%	12,857	52
2003	1.0%	0.4%	12,958	53
2004	1.0%	0.4%	13,023	54
2005	1.0%	0.4%	13,088	55
2006	1.0%	0.4%	13,202	56
2007	1.0%	0.4%	13,334	57
2008	1.0%	0.4%	13,468	58
2009	1.0%	0.4%	13,602	60
2010	1.0%	0.4%	13,738	61
2011	1.0%	0.4%	13,876	62
2012	1.0%	0.5%	14,014	63
2013	1.0%	0.5%	14,154	64
2014	1.0%	0.5%	14,296	66
2015	1.0%	0.5%	14,438	67
2016	1.0%	0.5%	14,583	68
2017	1.0%	0.5%	14,729	70
2018	1.0%	0.5%	14,876	71
2019	1.0%	0.5%	15,025	73
2020	1.0%	0.5%	15,175	74
2021	1.0%	0.5%	15,327	76
2022	1.0%	0.5%	15,481	77
2023	1.0%	0.5%	15,635	79
2024	1.0%	0.5%	15,792	80
2025	1.0%	0.5%	15,950	82
2026	1.0%	0.5%	16,109	83
Total 2001-2026				1,713

## NOTES:

(B) - Based upon judgment

(C) = Prior (C) x [ 1 + (B) ]

For 2000, see Sheet 3 of this exhibit for selected frequency

(D) - Based on Appendix D, Section I, Exhibit 2, Sheet 1, Column (E) with interpolation applied to reflect number of existing tanks at mid point of report year

(E) = (C) x (D)

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**HISTORY OF CONFIRMED RELEASE FREQUENCIES  
BASED ON HISTORICAL CONFIRMED RELEASES FROM ALL TANKS**

(A)	(B)	(C)	(D)
Report Year	Average Number of Existing Petroleum UST Systems	Confirmed Releases	Confirmed Releases Frequency
1988	NA	89	NA
1989	NA	650	NA
1990	NA	236	NA
1991	NA	1,283	NA
1992	26,190	278	1.06%
1993	24,189	719	2.97%
1994	21,584	120	0.56%
1995	19,733	119	0.60%
1996	18,985	154	0.81%
1997	16,544	206	1.25%
1998	14,391	314	2.18%
1999	12,851	219	1.70%
2000	12,506	71	0.57%
1992-2000 Average			1.30%
1996-2000 Average			1.30%

**NOTES:**

(B) - Based on average number of all existing tanks from Appendix D, Section I, Exhibit 2, Sheet 2, Column (B) adjusted to reflect averages on a report year basis

(C) - Based on release database provided by DHEC; only releases with payments are included

(D) = (C) / (B)

**HISTORY OF CONFIRMED RELEASE FREQUENCIES  
BASED ON HISTORICAL CONFIRMED RELEASES FROM PERMITTED/UPGRADED TANKS**

(A)	(B)	(C)	(D)
Report Year	Average Number of Existing Petroleum UST Systems	Confirmed Releases	Confirmed Releases Frequency
1988	NA	NA	NA
1989	NA	NA	NA
1990	6,764	14	0.21%
1991	7,341	88	1.20%
1992	7,859	19	0.24%
1993	8,359	72	0.86%
1994	8,763	14	0.16%
1995	9,269	17	0.18%
1996	9,852	20	0.20%
1997	10,643	27	0.25%
1998	11,818	31	0.26%
1999	12,344	52	0.42%
2000	12,454	37	0.30%
1990-2000 Average			0.39%
1996-2000 Average			0.29%

<b>Selected Frequency</b>	<b>0.40%</b>
---------------------------	--------------

**NOTES:**

(B) - Based on number of permitted and upgraded tanks provided by DHEC

(C) - Based on release database provided by DHEC;

only releases from permitted or upgraded tanks with payments are included

(D) = (C) / (B)

## PROJECTION OF TANK POPULATION

(A)	(B)	(C)	(D)	(E)	(F)	(G)
EPA Fiscal Year Ending	Selected % change in number of Tanks Existing	Selected % of Existing Tanks Closed	Selected % change in Total number of Tanks	Projected -- Number of Petroleum UST Systems --		
				Existing	Closed	Total
2000				12,494	29,963	42,457
2001	1.6%	7.0%	2.5%	12,700	30,838	43,538
2002	1.6%	7.0%	2.5%	12,909	31,727	44,636
2003	0.5%	4.5%	1.4%	12,974	32,308	45,282
2004	0.5%	4.5%	1.4%	13,039	32,892	45,931
2005	0.5%	4.5%	1.4%	13,104	33,479	46,583
2006	1.0%	4.5%	1.5%	13,235	34,069	47,304
2007	1.0%	4.5%	1.5%	13,367	34,665	48,032
2008	1.0%	4.5%	1.5%	13,501	35,267	48,768
2009	1.0%	4.5%	1.5%	13,636	35,875	49,511
2010	1.0%	4.5%	1.5%	13,772	36,489	50,261
2011	1.0%	4.5%	1.5%	13,910	37,109	51,019
2012	1.0%	4.5%	1.5%	14,049	37,735	51,784
2013	1.0%	4.5%	1.5%	14,189	38,367	52,556
2014	1.0%	4.5%	1.5%	14,331	39,006	53,337
2015	1.0%	4.5%	1.5%	14,474	39,651	54,125
2016	1.0%	4.5%	1.5%	14,619	40,302	54,921
2017	1.0%	4.5%	1.5%	14,765	40,960	55,725
2018	1.0%	4.5%	1.5%	14,913	41,624	56,537
2019	1.0%	4.5%	1.5%	15,062	42,295	57,357
2020	1.0%	4.5%	1.4%	15,213	42,973	58,186
2021	1.0%	4.5%	1.4%	15,365	43,658	59,023
2022	1.0%	4.5%	1.4%	15,519	44,349	59,868
2023	1.0%	4.5%	1.4%	15,674	45,047	60,721
2024	1.0%	4.5%	1.4%	15,831	45,752	61,583
2025	1.0%	4.5%	1.4%	15,989	46,464	62,453
2026	1.0%	4.5%	1.4%	16,149	47,184	63,333

## NOTES:

(A) - Based on tank population at the end of the 4th quarter of fiscal year, which is September 30

(B),(C) - Based upon judgment

(D) = (G) / prior (G) - 1

(E) = [ 1 + (B) ] x prior (E)

(F) = (C) x prior (E) + prior (F)

(G) = (E) + (F)

## HISTORY OF TANK POPULATION

(A)		(B)	(C)	(D)	(E)		(F)	(G)	(H)	(I)	(J)	(K)	(L)
		Cumulative ----- Number of ----- Petroleum UST Systems			Incremental Number of Petroleum UST Systems		----- Quarterly ----- % % of % of New to Existing Existing Tanks Closed			----- Annual ----- % % of % of New to Existing Existing Tanks Closed			% Change in # of Existing Tanks
EPA Fiscal Quarter		Existing	Closed	Total	New	Closed							
1992	1st QTR												
	2nd QTR	25,924	4,254	30,178									
	3rd QTR	26,295	5,541	31,836	1,658	1,287	6.4%	5.0%	1.4%				
	4th QTR	26,295	6,556	32,851	1,015	1,015	3.9%	3.9%	0.0%				
1993	1st QTR	26,247	7,151	33,398	547	595	2.1%	2.3%	-0.2%				
	2nd QTR	26,416	7,872	34,288	890	721	3.4%	2.7%	0.6%				
	3rd QTR	25,738	13,475	39,213	4,925	5,603	18.6%	21.2%	-2.6%				
	4th QTR	21,644	15,629	37,273	(1,940)	2,154	-7.5%	8.4%	-15.9%	16.8%	34.5%	-17.7%	
1994	1st QTR	22,958	16,884	39,842	2,569	1,255	11.9%	5.8%	6.1%				
	2nd QTR	22,137	17,809	39,946	104	925	0.5%	4.0%	-3.6%				
	3rd QTR	21,674	18,455	40,129	183	646	0.8%	2.9%	-2.1%				
	4th QTR	21,262	19,041	40,303	174	586	0.8%	2.7%	-1.9%	14.0%	15.8%	-1.8%	
1995	1st QTR	21,262	19,560	40,822	519	519	2.4%	2.4%	0.0%				
	2nd QTR	20,263	19,701	39,964	(858)	141	-4.0%	0.7%	-4.7%				
	3rd QTR	19,821	20,253	40,074	110	552	0.5%	2.7%	-2.2%				
	4th QTR	19,387	20,837	40,224	150	584	0.8%	2.9%	-2.2%	-0.4%	8.4%	-8.8%	
1996	1st QTR	19,461	21,142	40,603	379	305	2.0%	1.6%	0.4%				
	2nd QTR	19,302	21,467	40,769	166	325	0.9%	1.7%	-0.8%				
	3rd QTR	19,036	21,912	40,948	179	445	0.9%	2.3%	-1.4%				
	4th QTR	18,897	22,236	41,133	185	324	1.0%	1.7%	-0.7%	4.7%	7.2%	-2.5%	
1997	1st QTR	18,705	22,637	41,342	209	401	1.1%	2.1%	-1.0%				
	2nd QTR	18,454	23,080	41,534	192	443	1.0%	2.4%	-1.3%				
	3rd QTR	16,251	23,387	39,638	(1,896)	307	-10.3%	1.7%	-11.9%				
	4th QTR	15,986	23,785	39,771	133	398	0.8%	2.4%	-1.6%	-7.2%	8.2%	-15.4%	
1998	1st QTR	15,484	24,429	39,913	142	644	0.9%	4.0%	-3.1%				
	2nd QTR	15,164	25,578	40,742	829	1,149	5.4%	7.4%	-2.1%				
	3rd QTR	14,738	26,224	40,962	220	646	1.5%	4.3%	-2.8%				
	4th QTR	14,298	26,877	41,175	213	653	1.4%	4.4%	-3.0%	8.8%	19.3%	-10.6%	
1999	1st QTR	13,363	28,073	41,436	261	1,196	1.8%	8.4%	-6.5%				
	2nd QTR	13,136	28,533	41,669	233	460	1.7%	3.4%	-1.7%				
	3rd QTR	12,903	28,871	41,774	105	338	0.8%	2.6%	-1.8%				
	4th QTR	12,810	29,102	41,912	138	231	1.1%	1.8%	-0.7%	5.2%	15.6%	-10.4%	
2000	1st QTR	12,553	29,369	41,922	10	267	0.1%	2.1%	-2.0%				
	2nd QTR	12,516	29,477	41,993	71	108	0.6%	0.9%	-0.3%				
	3rd QTR	12,507	29,574	42,081	88	97	0.7%	0.8%	-0.1%				
	4th QTR	12,494	29,963	42,457	376	389	3.0%	3.1%	-0.1%	4.3%	6.7%	-2.5%	

## NOTES:

(A) - EPA fiscal years run from October 1 - September 30

(B),(C),(D) - Source: EPA's STARS report

(E) = (D) - prior (D)

(F) = (C) - prior (C)

(G) = (E) / prior (B)

(H) = (F) / prior (B)

(I) = (B) / prior (B) - 1

PROJECTION OF AVERAGE SEVERITY  
GROSS OF DEDUCTIBLE

(A)	(B)	(C)
Report Year	Selected Annual Average Severity Trend	Average Severity
2000		\$150,000
2001	4.0%	156,000
2002	4.0%	162,240
2003	4.0%	168,730
2004	4.0%	175,479
2005	4.0%	182,498
2006	4.0%	189,798
2007	4.0%	197,390
2008	4.0%	205,285
2009	4.0%	213,497
2010	4.0%	222,037
2011	4.0%	230,918
2012	4.0%	240,155
2013	4.0%	249,761
2014	4.0%	259,751
2015	4.0%	270,142
2016	4.0%	280,947
2017	4.0%	292,185
2018	4.0%	303,872
2019	4.0%	316,027
2020	4.0%	328,668
2021	4.0%	341,815
2022	4.0%	355,488
2023	4.0%	369,707
2024	4.0%	384,496
2025	4.0%	399,875
2026	4.0%	415,870

## NOTES:

(B) - Based on judgment

(C) = Prior (C) x [ 1 + (B) ]

For 2000, see Sheet 3 of this exhibit for selected average severity

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**HISTORY OF AVERAGE SEVERITY  
BASED ON HISTORICAL CONFIRMED RELEASES FROM ALL TANKS**

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Report Year	Selected Ultimate Losses Net of Deductible (\$000's)	Selected Ultimate Deductible Losses (\$000's)	Trend Factor to 2000	Trended Ultimate Losses Gross of Deductible (\$000's)	Trended Ultimate Losses Net of Deductible (\$000's)	Trended Average Severity Gross of Deductible (\$)	Trended Average Severity Net of Deductible (\$)
1988	\$12,076	\$0	1.601	\$19,334	\$19,334	\$217,238	\$217,238
1989	47,461	0	1.539	73,064	73,064	112,406	112,406
1990	11,830	667	1.480	18,499	17,511	78,384	74,200
1991	64,392	183	1.423	91,911	91,650	71,637	71,434
1992	11,835	1	1.369	16,199	16,198	58,271	58,265
1993	29,476	588	1.316	39,563	38,789	55,025	53,948
1994	9,092	1,928	1.265	13,944	11,504	116,200	95,865
1995	10,710	2,035	1.217	15,507	13,030	130,307	109,496
1996	11,462	2,339	1.170	16,145	13,409	104,836	87,069
1997	13,118	3,885	1.125	19,126	14,756	92,843	71,631
1998	16,151	6,169	1.082	24,141	17,468	76,882	55,632
1999	15,105	5,158	1.040	21,074	15,710	96,230	71,733
2000	15,162	5,719	1.000	20,881	15,162	294,104	213,554
1988-2000	\$267,870	\$28,673		\$389,387	\$357,585	\$87,346	\$80,212
1996-2000	\$70,998	\$23,270		\$101,367	\$76,505	\$105,152	\$79,362

**NOTES:**

(B) - See Appendix D, Section II, Exhibit 2, Sheet 1, Column (F)

(C) - See Appendix D, Section II, Exhibit 2, Sheet 3, Column (F)

(D) - Severity trend of 4% based on judgment

(E) = [ (B) + (C) ] x (D)

(F) = (E) - (C) x (D)

(G) = (E) / Appendix D, Section II, Exhibit 2, Sheet 2, Column (F) x 1,000

(H) = (F) / Appendix D, Section II, Exhibit 2, Sheet 2, Column (F) x 1,000

**HISTORY OF AVERAGE SEVERITY  
BASED ON HISTORICAL CONFIRMED RELEASES FROM PERMITTED/UPGRADED TANKS**

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Report Year	Paid Losses Gross of Deductible (\$000's)	Developed & Capped Losses Gross of Deductible (\$000's)	Trend Factor to 2000	Trended Ultimate Losses Gross of Deductible (\$000's)	Confirmed Releases	Trended Average Severity Gross of Deductible (\$)
1988	NA	NA	1.601	NA	NA	NA
1989	NA	NA	1.539	NA	NA	NA
1990	253	365	1.480	541	14	38,624
1991	3,113	4,838	1.423	6,887	88	78,257
1992	327	559	1.369	766	19	40,291
1993	1,401	2,698	1.316	3,551	72	49,315
1994	369	828	1.265	1,048	14	74,836
1995	402	1,093	1.217	1,330	17	78,250
1996	577	2,015	1.170	2,357	20	117,861
1997	555	2,845	1.125	3,200	27	118,508
1998	1,872	9,809	1.082	10,610	31	342,245
1999	828	13,918	1.040	14,475	52	278,367
2000	225	11,384	1.000	11,384	37	307,689
1990-2000	\$9,920	\$50,354		\$56,148	391	\$143,600
1996-2000	\$4,056	\$39,971		\$42,026	167	\$251,653

<b>Selected Average Severity Gross of Deductible</b>	<b>\$150,000</b>
--	------------------

**NOTES:**

(B) - Based on release database provided by DHEC; only releases from permitted or upgraded tanks are included

(C) - Based on releases from permitted and upgraded tanks; losses are developed and capped at \$1 million.

(D) - Severity trend of 4% based on judgment

(E) = (C) x (D)

(F) - See Appendix D, Section I, Exhibit 1, Sheet 3, Column (C)

(G) = (E) / (F) x 1,000

## SELECTION OF ULTIMATE LOSSES (\$000's)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
----- Ultimate Losses based on -----							
Report Year	Evaluation Point (Months)	Developed Paid Losses Net of Deductible	Developed Paid Losses Gross of Deductible minus Ultimate Deductible	Bornhuetter- Ferguson Method	Selected Ultimate Losses	Paid Losses Net of Deductible as of 12/31/2000	Selected Reserves as of 12/31/2000
1988	163	\$11,811	\$11,811	\$12,606	\$12,076	\$8,737	\$3,339
1989	151	47,461	47,461	38,853	47,461	33,463	13,998
1990	139	11,356	11,654	12,481	11,830	7,388	4,442
1991	127	64,341	64,443	46,742	64,392	38,610	25,783
1992	115	11,330	11,321	12,856	11,835	6,145	5,691
1993	103	29,218	29,734	22,423	29,476	12,980	16,496
1994	91	1,926	3,064	9,092	9,092	691	8,400
1995	79	3,421	5,303	10,710	10,710	1,086	9,623
1996	67	2,867	5,313	11,462	11,462	698	10,764
1997	55	5,410	15,056	13,118	13,118	731	12,387
1998	43	20,537	37,718	16,151	16,151	1,863	14,287
1999	31	16,399	43,032	15,105	15,105	161	14,944
2000	19	12,342	15,128	15,162	15,162	207	14,956
Total		\$238,420	\$301,038	\$236,761	\$267,870	\$112,760	\$155,110

## NOTES:

(C) - See Appendix D, Section II, Exhibit 3, Sheet 1c, Column (G)

(D) = Appendix D, Section II, Exhibit 3, Sheet 2c, Column (G) - Appendix D, Section II, Exhibit 2, Sheet 3, Column (F)

(E) - See Appendix D, Section II, Exhibit 4, Column (H)

(F) - Based upon judgment

(G) - See diagonal for the calendar year 2000 on Appendix D, Section II, Exhibit 3, Sheet 1a

(H) = (F) - (G)

## DIAGNOSTICS OF ULTIMATE LOSSES

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Report Year	Evaluation Point (Months)	Selected Ultimate Losses (\$000's)	Exposures (Average Number of Existing Petroleum UST Systems)	Pure Premium	Confirmed Releases	Untrended Average Severity (\$)	Confirmed Releases Frequency (Per 1,000 exposures)
1988	163	\$12,076	NA	NA	89	\$135,686	NA
1989	151	47,461	NA	NA	650	73,017	NA
1990	139	11,830	NA	NA	236	50,127	NA
1991	127	64,392	NA	NA	1,283	50,189	NA
1992	115	11,835	26,190	451.90	278	42,574	10.61
1993	103	29,476	24,189	1,218.58	719	40,996	29.72
1994	91	9,092	21,584	421.23	120	75,764	5.56
1995	79	10,710	19,733	542.73	119	89,998	6.03
1996	67	11,462	18,985	603.73	154	74,427	8.11
1997	55	13,118	16,544	792.93	206	63,680	12.45
1998	43	16,151	14,391	1,122.29	314	51,435	21.82
1999	31	15,105	12,851	1,175.47	219	68,974	17.04
2000	19	15,162	12,506	1,212.44	71	213,554	5.68
1988-2000		\$267,870	NA	NA	4,458	\$60,088	NA
1996-2000		\$70,998	75,276	\$943.17	964	\$73,649	12.81

## NOTES:

(C) - See Appendix D, Section II, Exhibit 2, Sheet 1, Column (F)

(D) - Based on average number of existing tanks from Appendix D, Section I, Exhibit 2, Sheet 2, Column (B) adjusted to reflect averages on a report year basis

(E) = (C) / (D) x 1,000

(F) - See Appendix D, Section I, Exhibit 1, Sheet 2, Column (C)

(G) = (C) / (F) x 1,000

(H) = (F) / (D) x 1,000

## SELECTION OF ULTIMATE DEDUCTIBLE LOSSES (\$000's)

(A)	(B)	(C)	(D)	(E)	(F)
----- Ultimate Losses based on -----					
Report Year	Evaluation Point (Months)	Deductible Losses Development	Individual Release Development	Difference Between Gross & Net Development	Selected Ultimate Deductible Losses
1988	163	\$0	\$0	\$0	\$0
1989	151	0	0	0	0
1990	139	667	5,856	965	667
1991	127	183	1,489	285	183
1992	115	1	0	(8)	1
1993	103	485	588	1,104	588
1994	91	1,417	1,928	3,067	1,928
1995	79	1,720	2,035	3,918	2,035
1996	67	2,029	2,339	4,785	2,339
1997	55	5,738	3,885	13,530	3,885
1998	43	10,486	6,169	23,350	6,169
1999	31	13,625	5,158	31,791	5,158
2000	19	5,719	1,744	8,504	5,719
1988-2000		\$42,070	\$31,192	\$91,291	\$28,673
1996-2000		\$37,597	\$19,295	\$81,961	\$23,270

## NOTES:

(C) - See Appendix D, Section II, Exhibit 3, Sheet 3c Column (E)

(D) - Deductible losses based on release database provided by DHEC and developed and capped based on various deductible at different periods

(E) = Appendix D, Section II, Exhibit 3, Sheet 2c, Column (G) - Appendix D, Section II, Exhibit 3, Sheet 1c, Column (G)

(F) - Based upon judgment

**Paid Loss Development Method**  
**Paid Losses Net of Deductible (\$000's)**

Report Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168
1988	0	211	293	562	1,472	3,042	3,958	6,279	6,530	7,036	7,682	8,349	8,737	8,865
1989	57	941	2,396	7,170	15,991	18,848	21,668	22,456	24,372	27,773	31,634	33,463	34,776	
1990	0	246	1,666	3,042	3,730	4,083	4,329	4,959	5,741	6,814	7,388	7,851		
1991	7	2,822	12,201	14,894	17,256	18,615	22,566	28,884	35,311	38,610	41,392			
1992	153	1,363	2,121	2,621	2,770	3,741	4,587	5,470	6,145	6,617				
1993	136	483	1,564	1,886	3,473	6,517	10,582	12,980	15,255					
1994	0	0	0	61	380	537	691	870						
1995	0	123	152	401	969	1,086	1,267							
1996	1	98	241	435	698	836								
1997	1	32	269	731	1,062									
1998	234	956	1,863	2,687										
1999	0	161	794											
2000	207	357												
2001	2													

The source of the above is loss run provided by DHEC.

Losses are net of deductibles.

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development.

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**Paid Loss Development Method**  
**Paid Losses Net of Deductible (\$000's)**

Report Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-Ult
1988		1,389	1,919	2,619	2,067	1,301	1,586	1,040	1,078	1,092	1,087	1,046	1,015	
1989	16,577	2,548	2,992	2,230	1,179	1,144	1,041	1,085	1,140	1,139	1,058	1,039		
1990		6,763	1,826	1,226	1,095	1,060	1,146	1,158	1,187	1,084	1,063			
1991	380,803	4,324	1,221	1,159	1,079	1,212	1,280	1,222	1,093	1,072				
1992	8,882	1,557	1,236	1,057	1,350	1,225	1,194	1,123	1,077					
1993	3,559	3,236	1,206	1,842	1,874	1,625	1,227	1,175						
1994			272,714	6,190	1,414	1,287	1,259							
1995		1,243	2,627	2,419	1,121	1,166								
1996	103,351	2,468	1,806	1,604	1,198									
1997	43,945	8,506	2,717	1,452										
1998	4,079	1,949	1,442											
1999		4,933												
2000	1,725													
2001														

Avg	80,171	3,398	29,026	2,261	1,397	1,265	1,246	1,126	1,124	1,105	1,072	1,046		
Avg excl H/L	35,367	3,029	2,043	1,871	1,339	1,234	1,212	1,122	1,116	1,092				
Avg last 3	24,012	4,307	2,383	3,404	1,470	1,379	1,234	1,168	1,140	1,105				
Vol Wtd	12,613	3,130	1,521	1,504	1,226	1,233	1,199	1,148	1,115	1,122	1,063	1,046		
Selected	12,613	3,029	2,043	1,871	1,339	1,234	1,212	1,122	1,116	1,092	1,063	1,046	1,020	1,321
Age to Ult	599,875	47,558	15,701	7,685	4,107	3,067	2,486	2,052	1,828	1,638	1,500	1,410	1,348	1,321
% to Ult	0.2%	2.1%	6.4%	13.0%	24.3%	32.6%	40.2%	48.7%	54.7%	61.1%	66.7%	70.9%	74.2%	75.7%

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development.

We therefore excluded the last diagonal in our calculation of the averages of loss development factors.

Months	7	19	31	43	55	67	79	91	103	115	127	139	151	163
% to Ult	0.1%	1.3%	4.6%	10.2%	19.6%	29.2%	37.1%	45.2%	52.2%	58.4%	64.3%	69.1%	72.8%	75.1%
Age to Ult	909,091	77,159	21,779	9,761	5,095	3,429	2,699	2,213	1,915	1,712	1,554	1,446	1,373	1,332

**Paid Loss Development Method**  
**Paid Losses Net of Deductible (\$000's)**

(A) Report Year	(B) Eval Point (Months)	(C) Paid Losses (\$000's)	(D) Dev Factor	(E) Unlimited Ultimate Losses (\$000's)	(F) Projected Excess Losses (\$000's)	(G) Limited Ultimate Losses (\$000's)
1988	163	\$8,865	1.332	\$11,811	\$0	\$11,811
1989	151	34,776	1.373	47,756	295	47,461
1990	139	7,851	1.446	11,356	0	11,356
1991	127	41,392	1.554	64,341	0	64,341
1992	115	6,617	1.712	11,330	0	11,330
1993	103	15,255	1.915	29,218	0	29,218
1994	91	870	2.213	1,926	0	1,926
1995	79	1,267	2.699	3,421	0	3,421
1996	67	836	3.429	2,867	0	2,867
1997	55	1,062	5.095	5,410	0	5,410
1998	43	2,687	9.761	26,231	5,694	20,537
1999	31	794	21.779	17,295	896	16,399
2000	19	357	77.159	27,524	15,182	12,342
<b>Total</b>		<b>\$122,630</b>		<b>\$260,487</b>	<b>\$22,067</b>	<b>\$238,420</b>

Losses are net of deductibles.

**NOTES:**

(B) - As of 8/3/01

(C) - See Sheet 1a of this exhibit

(D) - See Sheet 1b of this exhibit

(E) = (C) x (D)

(F) = Losses excess of \$1,000,000 determined based on developing individual releases in release database provided by DHEC  
(G) = (E) - (F)



**Paid Loss Development Method**  
**Paid Losses Gross of Deductible (\$000's)**

Report Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168
1988	0	211	293	562	1,472	3,042	3,958	6,279	6,530	7,036	7,682	8,349	8,737	8,865
1989	57	941	2,396	7,170	15,991	18,348	21,568	22,456	24,372	27,773	31,634	33,463	34,776	
1990	0	271	1,766	3,157	3,887	4,746	4,992	5,622	6,408	7,481	8,055	8,518		
1991	7	2,822	12,251	14,997	17,410	18,770	22,731	29,049	35,475	38,793	41,575			
1992	153	1,363	2,121	2,621	2,770	3,741	4,582	5,471	6,146	6,619				
1993	136	483	1,626	1,965	3,633	6,751	10,892	13,499	15,739					
1994	1	113	297	558	1,077	1,502	1,930	2,224						
1995	0	304	560	1,077	1,852	2,388	2,722							
1996	18	236	532	1,222	1,934	2,193								
1997	34	605	1,806	3,149	3,696									
1998	361	2,344	4,618	5,828										
1999	193	1,769	3,012											
2000	329	689												
2001	4													

The source of the above is loss run provided by DHEC.

Losses are gross of deductibles.

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development.

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**Paid Loss Development Method**  
**Paid Losses Gross of Deductible (\$000's)**

Report Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-Ult
1988		1.389	1.919	2.619	2.067	1.301	1.586	1.040	1.078	1.092	1.087	1.046	1.015	
1989	16.577	2.548	2.992	2.230	1.179	1.144	1.041	1.085	1.140	1.139	1.058	1.039		
1990		6.508	1.788	1.231	1.221	1.052	1.126	1.140	1.167	1.077	1.057			
1991	380.803	4.342	1.224	1.161	1.078	1.211	1.278	1.221	1.094	1.072				
1992	8.882	1.557	1.236	1.057	1.350	1.225	1.194	1.123	1.077					
1993	3.559	3.364	1.208	1.849	1.858	1.613	1.231	1.174						
1994	85.413	2.637	1.882	1.928	1.395	1.286	1.152							
1995	800.160	1.842	1.922	1.720	1.290	1.139								
1996	12.784	2.256	2.297	1.583	1.134									
1997	17.889	2.986	1.744	1.173										
1998	6.489	1.970	1.262											
1999	9.155	1.702												
2000	2.095													
2001														
Avg	134.171	2.855	1.821	1.709	1.430	1.262	1.243	1.122	1.119	1.103	1.072	1.046		
Avg excl H/L	67.249	2.611	1.752	1.672	1.382	1.233	1.207	1.116	1.117	1.092				
Avg last 3	11.178	2.404	1.988	1.744	1.514	1.375	1.234	1.162	1.133	1.103				
Vol Wtd	11.916	2.917	1.543	1.501	1.243	1.231	1.197	1.146	1.114	1.120	1.063	1.046		
Selected	11.916	2.611	1.752	1.672	1.382	1.233	1.197	1.146	1.114	1.092	1.063	1.046	1.020	1.321
Age to Ult	388.783	32.627	12.494	7.134	4.267	3.088	2.503	2.091	1.824	1.638	1.500	1.410	1.348	1.321
% to Ult	0.3%	3.1%	8.0%	14.0%	23.4%	32.4%	39.9%	47.8%	54.8%	61.1%	66.7%	70.9%	74.2%	75.7%

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development. We therefore excluded the last diagonal in our calculation of the averages of loss development factors.

Months	7	19	31	43	55	67	79	91	103	115	127	139	151	163
% to Ult	0.1%	1.9%	5.9%	11.5%	19.5%	28.7%	36.8%	44.5%	51.9%	58.5%	64.3%	69.1%	72.8%	75.1%
Age to Ult	909.091	52.769	16.819	8.686	5.125	3.490	2.718	2.245	1.927	1.711	1.554	1.446	1.373	1.332

**Paid Loss Development Method**  
**Paid Losses Gross of Deductible (\$000's)**

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Report Year	Eval Point (Months)	Paid Losses (\$000's)	Dev Factor	Unlimited Ultimate Losses (\$000's)	Projected Excess Losses (\$000's)	Limited Ultimate Losses (\$000's)
1988	163	\$8,865	1.332	\$11,811	\$0	\$11,811
1989	151	34,776	1.373	47,756	295	47,461
1990	139	8,518	1.446	12,321	0	12,321
1991	127	41,575	1.554	64,626	0	64,626
1992	115	6,619	1.711	11,322	0	11,322
1993	103	15,739	1.927	30,322	0	30,322
1994	91	2,224	2.245	4,992	0	4,992
1995	79	2,722	2.718	7,396	57	7,339
1996	67	2,193	3.490	7,652	0	7,652
1997	55	3,696	5.125	18,941	0	18,941
1998	43	5,828	8.686	50,626	6,739	43,887
1999	31	3,012	16.819	50,654	2,464	48,190
2000	19	689	52.769	36,346	15,499	20,847
<b>Total</b>		<b>\$136,454</b>		<b>\$354,765</b>	<b>\$25,054</b>	<b>\$329,711</b>

Losses are gross of deductibles.

**NOTES:**

(B) - As of 8/3/01

(C) - See Sheet 2a of this exhibit

(D) - See Sheet 2b of this exhibit

(E) = (C) x (D)

(F) = Losses excess of \$1,000,000 determined based on developing individual releases in release database provided by DHEC

(G) = (E) - (F)

Paid Loss Development Method  
Paid Deductible Losses (\$000's)

Report Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	25	100	115	157	663	663	663	667	667	667	667	667	667
1991	0	0	50	103	155	155	164	164	164	183	183	183	183	183
1992	0	0	0	0	0	0	1	1	1	1	1	1	1	1
1993	0	0	0	62	79	160	240	309	429	484	484	484	484	484
1994	1	113	296	497	697	964	1,239	1,354	1,354	1,354	1,354	1,354	1,354	1,354
1995	0	181	408	676	883	1,302	1,454	1,454	1,454	1,454	1,454	1,454	1,454	1,454
1996	18	138	291	787	1,236	1,357	1,357	1,357	1,357	1,357	1,357	1,357	1,357	1,357
1997	33	573	1,537	2,418	2,634	2,634	2,634	2,634	2,634	2,634	2,634	2,634	2,634	2,634
1998	127	1,388	2,755	3,141	3,141	3,141	3,141	3,141	3,141	3,141	3,141	3,141	3,141	3,141
1999	193	1,608	2,218	2,218	2,218	2,218	2,218	2,218	2,218	2,218	2,218	2,218	2,218	2,218
2000	122	332	332	332	332	332	332	332	332	332	332	332	332	332
2001	2	2	2	2	2	2	2	2	2	2	2	2	2	2

The source of the above is loss run provided by DHEC.

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development.

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Paid Loss Development Method  
Paid Deductible Losses (\$000's)

Report Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-Ult
1988														
1989														
1990		4.000	1.149	1.369	4.214	1.000	1.000	1.006	1.000	1.000	1.000			
1991			2.060	1.500	1.005	1.058	1.060	1.000	1.115	1.000				
1992							1.000	1.000	1.000					
1993			1.276	2.011	1.505	1.287	1.387	1.127						
1994	85.413	2.635	1.677	1.402	1.384	1.295	1.093							
1995	477.318	2.248	1.659	1.306	1.474	1.117								
1996	7.894	2.106	2.703	1.571	1.098									
1997	17.322	2.681	1.574	1.089										
1998	10.941	1.985	1.140											
1999	8.322	1.379												
2000	2.721													
2001														

Avg	101.202	2.609	1.728	1.526	1.916	1.157	1.097	1.002	1.057	1.000				
Avg excl H/L	30.499	2.418	1.649	1.461	1.454	1.171	1.000	1.000						
Avg last 3	12.195	2.258	1.979	1.426	1.454	1.286	1.129	1.002						
Vol Wtd	10.812	2.274	1.704	1.456	1.621	1.175	1.105	1.005	1.023	1.000				
Selected	10.812	2.274	1.704	1.461	1.454	1.171	1.105	1.005	1.000	1.000	1.000	1.000	1.000	1.000
Age to Ult	115.804	10.711	4.709	2.764	1.892	1.301	1.111	1.005	1.000	1.000	1.000	1.000	1.000	1.000
% to Ult	0.9%	9.3%	21.2%	36.2%	52.8%	76.9%	90.0%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Shaded area denotes amnesty period.

The latest diagonal is as of 8/3/01, and therefore the last two diagonals represent only 7 months of development.

We therefore excluded the last diagonal in our calculation of the averages of loss development factors.

Months	7	19	31	43	55	67	79	91	103	115	127	139	151	163
% to Ult	0.1%	5.8%	16.3%	30.0%	45.9%	66.9%	84.5%	95.6%	99.8%	100.0%	100.0%	100.0%	100.0%	100.0%
Age to Ult	909.091	17.223	6.144	3.339	2.179	1.496	1.183	1.046	1.002	1.000	1.000	1.000	1.000	1.000

Paid Loss Development Method  
Paid Deductible Losses (\$000's)

(A) Report Year	(B) Eval Point (Months)	(C) Deductible Losses (\$000's)	(D) Dev Factor	(E) Ultimate Deductible (\$000's)
1988	163	\$0	1.000	\$0
1989	151	0	1.000	0
1990	139	667	1.000	667
1991	127	183	1.000	183
1992	115	1	1.000	1
1993	103	484	1.002	485
1994	91	1,354	1.046	1,417
1995	79	1,454	1.183	1,720
1996	67	1,357	1.496	2,029
1997	55	2,634	2.179	5,738
1998	43	3,141	3.339	10,486
1999	31	2,218	6.144	13,625
2000	19	332	17.223	5,719
Total		\$13,824		\$42,070

## NOTES:

(B) - As of 8/3/01

(C) - See Sheet 3a of this exhibit

(D) - See Sheet 3b of this exhibit

(E) = (C) x (D)

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## BORNHUETTER-FERGUSON METHOD (\$000's)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Report Year	Evaluation Point (Months)	Selected a priori Ultimate Losses	Paid Losses Development Factors	% Unpaid	Estimated Unpaid Losses	Paid Losses	Estimated Ultimate Losses
1988	163	\$15,000	1.332	24.9%	\$3,741	\$8,865	\$12,606
1989	151	15,000	1.373	27.2%	4,077	34,776	38,853
1990	139	15,000	1.446	30.9%	4,630	7,851	12,481
1991	127	15,000	1.554	35.7%	5,350	41,392	46,742
1992	115	15,000	1.712	41.6%	6,239	6,617	12,856
1993	103	15,000	1.915	47.8%	7,168	15,255	22,423
1994	91	15,000	2.213	54.8%	8,221	870	9,092
1995	79	15,000	2.699	62.9%	9,442	1,267	10,710
1996	67	15,000	3.429	70.8%	10,626	836	11,462
1997	55	15,000	5.095	80.4%	12,056	1,062	13,118
1998	43	15,000	9.761	89.8%	13,463	2,687	16,151
1999	31	15,000	21.779	95.4%	14,311	794	15,105
2000	19	15,000	77.159	98.7%	14,806	357	15,162
Total		\$195,000			\$114,131	\$122,630	\$236,761

## NOTES:

(C) - Based on judgment

(D) - See Appendix D, Section II, Exhibit 3, Sheet 1c, Column (D)

(E) =  $1 - 1 / (D)$ 

(F) = (C) x (E)

(G) - See Appendix D, Section II, Exhibit 3, Sheet 1c, Column (C)

(H) = (F) + (G)

**PROJECTION OF THIRD PARTY LIABILITY (SFRF) LOSSES**

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# **DESCRIPTION OF APPENDIX E**

## **PROJECTION OF THIRD PARTY LIABILITY (SFRF) LOSSES**

This appendix presents our projection of third party liability losses currently covered under SFRF.

### **Exhibit 1**

Exhibit 1 shows our calculation of the projected ultimate third party liability losses by report year. As in the projection of site rehabilitation (Superb Account) losses, these ultimate losses are based on the projected frequency and a projected trended average severity.

### **Exhibit 2**

Exhibit 2 shows the determination of the selected frequency and severity used in Exhibit 1. Note that due to the unavailability of SFRF data as of December 31, 2000 as well as the relative small size of the third party liability program, we have estimated liability as of August 3, 2001 and used that as our estimated liability as of December 31, 2000.

### **Exhibit 3**

Exhibit 3 shows a listing of all the third party liability claims reported as of August 3, 2001.

As of August 3, 2001, 33 third party liability claims have been reported to DHEC. Twenty three of these claims are closed, with 15 closed without payment. DHEC informed us that prior to 1995, claims were handled by the Budget and Control board and were paid with little investigation. Four of the 8 paid claims shown in Exhibit 3 were paid under that circumstance. Since DHEC took over SFRF in 1995, claims were investigated more closely and many claims were dismissed without payment. As of August 3, 2001, only 4 claims had been closed with payment by DHEC. We took the above into consideration when we made our selections of frequency and severity.

PROJECTION OF THIRD PARTY LIABILITY

(A)	(B)	(C)	(D)	(E)	(F)
Report Year	Projected Number of Confirmed Releases	Projected Number of Ultimate Third Party Claims	Projected Severity Trend	Projected Trended Severity	Projected Ultimate Losses
2000				\$50,000	
2001	51	0.204	4.0%	52,000	3,720
2002	52	0.210	4.0%	54,080	3,972
2003	53	0.214	4.0%	56,243	4,205
2004	54	0.217	4.0%	58,493	4,439
2005	55	0.220	4.0%	60,833	4,686
2006	56	0.224	4.0%	63,266	4,965
2007	57	0.229	4.0%	65,797	5,267
2008	58	0.233	4.0%	68,428	5,588
2009	60	0.238	4.0%	71,166	5,929
2010	61	0.243	4.0%	74,012	6,290
2011	62	0.248	4.0%	76,973	6,673
2012	63	0.253	4.0%	80,052	7,079
2013	64	0.258	4.0%	83,254	7,510
2014	66	0.263	4.0%	86,584	7,968
2015	67	0.268	4.0%	90,047	8,453
2016	68	0.274	4.0%	93,649	8,968
2017	70	0.279	4.0%	97,395	9,514
2018	71	0.285	4.0%	101,291	10,093
2019	73	0.290	4.0%	105,342	10,708
2020	74	0.296	4.0%	109,556	11,360
2021	76	0.302	4.0%	113,938	12,052
2022	77	0.308	4.0%	118,496	12,786
2023	79	0.314	4.0%	123,236	13,565
2024	80	0.321	4.0%	128,165	14,391
2025	82	0.327	4.0%	133,292	15,268
2026	83	0.334	4.0%	138,623	16,198
Total 2001-2026	1,713	6.852			\$221,646

NOTES:

(B) - See Appendix D, Section I, Exhibit 1, Sheet 1, Column (D)

(C) = Selected frequency of 4.0000 x (B) / 1,000

(D) - Based upon judgment

(E) = Based on selected severity of \$50,000 from Exhibit 2 of this appendix and trend based on Column (D)

(F) = (C) x (E) x 0.3500 as selected in Exhibit 2 of this appendix

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DHEC  
THIRD PARTY LIABILITY CASES

APPENDIX E  
EXHIBIT 2

DETERMINATION OF FREQUENCY AND SEVERITY

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
Release Report Year	Number of Third Party Claims	Number of Existing Petroleum UST Systems	Number of Confirmed Releases	Number of Third Party Claims per 1,000 Existing Tanks	Number of Third Party Claims per 1,000 Confirmed Releases	Number of Third Party Claims Open	Number of Third Party Claims Closed with Payment	Number of Third Party Claims Closed without Payment	Pending Amount	Amount Paid	Average Reported Severity	Average Paid Severity	Selected Reserves
1986	1	NA	NA	NA	NA	0	0	0	0	0	NA	NA	0
1987	1	NA	NA	NA	NA	0	0	0	0	0	NA	NA	0
1988	5	NA	89	NA	56,1798	1	1	2	77,000	330,000	135,667	165,000	77,000
1989	8	NA	650	NA	12,3077	2	0	6	64,000	0	32,000	NA	64,000
1990	6	NA	236	NA	25,4237	1	2	3	500,000	207,000	235,667	103,500	200,000
1991	2	NA	1,283	NA	1,5588	2	0	0	64,000	0	32,000	NA	64,000
1992	2	26,190	278	0.0764	7,1942	0	2	0	0	50,000	25,000	25,000	0
1993	6	24,189	719	0.2480	8,3449	4	0	2	128,000	0	32,000	NA	128,000
1994	0	21,584	120	0.0000	0.0000	0	0	0	0	0	NA	NA	0
1995	1	19,733	119	0.0507	8,4034	0	1	0	0	25,000	25,000	25,000	0
1996	1	18,985	154	0.0527	6,4935	0	1	0	0	25,000	25,000	25,000	0
1997	0	16,544	206	0.0000	0.0000	0	0	0	0	0	NA	NA	0
1998	0	14,391	314	0.0000	0.0000	0	0	0	0	0	NA	NA	0
1999	0	12,851	219	0.0000	0.0000	0	0	0	0	0	NA	NA	0
2000	0	12,506	71	0.0000	0.0000	0	0	0	0	0	NA	NA	0
Total	33	NA	NA	NA	NA	10	8	15	\$833,000	\$637,000	\$81,667	\$79,625	\$533,000
1991-2000	12	NA	3,483	NA	3,4453	6	4	2	\$192,000	\$100,000	\$29,200	\$25,000	\$192,000
1996-2000	1	75,276	964	0.0133	1,0373	0	1	0	\$0	\$25,000	\$25,000	\$25,000	\$0

Selected Frequency *	4,0000
Selected Ratio of number of Claims Closed with payment to Total Closed	0.3500
Selected Severity	\$50,000
Selected Liability for Report Years through 2000	\$533,000

\* - Defined as number of reported third party claims per 1,000 confirmed releases

NOTES:

(C) - See Appendix D, Section I, Exhibit 1, Sheet 2 Column (B)

(D) - See Appendix D, Section I, Exhibit 1, Sheet 2 Column (C)

(E) = (B) / (C) x 1,000

(F) = (B) / (D) x 1,000

(B), (G), (H), (I), (J), (K) - Based on Exhibit 3 of this appendix

(L) = [(J) + (K)] / [(G) + (H)]

(M) = (K) / (H)

LISTING OF ALL REPORTED THIRD PARTY LIABILITY CLAIMS

(A)	(B)	(C)	(D)	(E)	(F)
Release Report Date	Claim Initiated Date	Site #	Claim Status	Pending Amount	Paid Amount
May-86		05675	Closed		
Jan-87	Apr-96	10367	Closed	NA	
Mar-88	Oct-96	05166	Closed		
May-88		06035	Closed		225,000
May-88		06035	Closed	NA	105,000
Jul-88	Nov-96	07672	Open	32,000	
Dec-88	Apr-99	02032	Closed	45,000	
Jan-89	Mar-96	04744	Closed	NA	
Feb-89	Sep-95	03766	Closed		
Aug-89		06018	Closed		
Aug-89		06347	Closed		
Oct-89	Mar-98	09877	Closed	NA	
Dec-89	Apr-99	04104	Closed		
Dec-89	Sep-2000	05669	Open	32,000	
Dec-89	Feb-99	08492	Open	32,000	
Jun-90	Apr-92	11741	Closed		35,000
Jun-90	Apr-92	11741	Open	500,000	
Nov-90	Dec-94	02720	Closed	NA	
Nov-90	Oct-2000	02720	Closed	NA	
Dec-90		06578	Closed		
Dec-90		12575	Closed		172,000
Dec-91	Feb-2000	08466	Open	32,000	
Dec-91	Oct-97	11818	Open	32,000	
Jan-92	Dec-97	14274	Closed		25,000
Jan-92	Dec-97	14274	Closed		25,000
Jan-93	Dec-96	12723	Closed		
Jan-93	Mar-98	12723	Open	32,000	
Jan-93	Dec-96	12723	Open	32,000	
Jan-93	Apr-98	12723	Open	32,000	
Jan-93	Sep-99	12723	Closed		
Jun-93	May-2001	16968	Open	32,000	
Oct-95	Oct-98	12030	Closed	NA	25,000
Mar-96	Jan-97	12492	Closed	NA	25,000
Total		32		\$833,000	\$637,000

The source of the above is DHEC as of approximately 8/3/01

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**ESTIMATION OF SEVERITY BY RBCA CLASS**

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# **DESCRIPTION OF APPENDIX F**

## **ESTIMATION OF SEVERITY BY RBCA CLASS**

This appendix presents our estimation of severity by RBCA class. For each class, we divided payment by total release count to calculate severity. We then adjust these severities to an ultimate level by multiplying each severity with an adjustment factor. This adjustment factor is calculated by dividing our selected net of deductible severity of \$125,000 (which is estimated from the gross of deductible severity of \$150,000 from Appendix D, Section II, Exhibit 1, Sheet 2) by the all-class severity shown at the bottom of column (F) in this exhibit.

The loss payments shown in this appendix are evaluated as of August 3, 2001. The estimated severities are above and beyond the \$25,000 deductible.

Note that these severities are not directly comparable with the severities in our last study as of December 31, 1998 since they were calculated on a different basis. In our last study, counts for releases without payment were not available, and we therefore calculated severities based on all releases. In this study, we were provided with a release database with allows us to determine the number of releases with payment. We calculated severities based only on releases with payment. As a result of this change in release count, our calculated severities are not comparable to those from our last study.

DHEC informs us that when RBCA classification was first implemented in 1995, many leaks were classified based on very limited information. Subsequently, better information was available and improvements were made and classification was performed more accurately. To the extent that the data DHEC provided to us still contains classification based on limited information, our results would be affected.

DHEC informed us that the RBCA class for individual leaks can change many times over the life of the leak. For the purpose of determining severity, DHEC assigned RBCA class to a leak based on the highest class a leak has ever been categorized, i.e. using the most severe class based on its history.

It is our understand that DHEC intends to use this severity to obtain an initial estimate of cost associated with a particular site in the absence of other information.

## ESTIMATION OF SEVERITY BY RBCA CLASS (\$000's)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
RBCA Class	Payment	Payment as a % of Total	Total Release Count by RBCA Class	Release Count as a % of Total	Severity (based on All Releases)	Selected Severity (based on Releases with Payment)	Estimated Current Liabilities by RBCA Class
1	\$27,917	20.8%	340	4.5%	\$82	\$576	\$32,219
2A	12,118	9.0%	286	3.8%	42	297	13,985
2B	35,063	26.1%	914	12.1%	38	269	40,467
3A	7,310	5.4%	198	2.6%	37	259	8,437
3B	34,918	26.0%	1,595	21.1%	22	154	40,300
4A	1,446	1.1%	83	1.1%	17	122	1,669
4B	4,935	3.7%	339	4.5%	15	102	5,696
5	6,546	4.9%	1,196	15.9%	5	38	7,555
CU	4,143	3.1%	2,594	34.4%	2	11	4,782
Total	\$134,398	100.0%	7,545	100.0%	\$18	\$125	\$155,110

## NOTES:

(B) - Based on loss runs as of 8/3/2001 provided by DHEC

(C) = (B) / (B) Total

(D) - Provided by DHEC; includes releases without payment

(E) = (D) / (D) Total

(F) = (B) / (D)

(G) = (F) adjusted by a factor so that overall average severity is equal to the selected severity in Appendix D, Section II, Exhibit 1, Sheet 3 adjusted to reflect the \$25,000 deductible

(H) = (C) x Estimated Current Liability of \$155,110

**DESCRIPTION OF RISK BASED CAPITAL**

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# **DESCRIPTION OF APPENDIX G**

## **DESCRIPTION OF RISK BASED CAPITAL**

[The following information was excerpted from Risk-Based Capital Requirements for Insurers, published by the NAIC.]

State laws generally require insurers to maintain minimum levels of capital or surplus. Historically, state laws have established insurers' capital and surplus requirements at a fixed amount for each major line of insurance.

In recent years insurers' business practices, particularly as they relate to exposure to risk have become more diverse. While some insurers remain conservative in both their investments and their underwriting practices, others have become less conservative.

In 1990, the NAIC examined both the existing capital requirements and this growing diversity in insurer business practices and concluded that consumers should be protected by subjecting companies that assume a more aggressive, risk-taking approach to higher capital requirements. After extensive research and expert advice, the NAIC adopted property/casualty risk-based capital (RBC) requirements in December 1993. RBC was regarded as a new solvency tool for consumer protection which was thought by many to be more responsive to the individual operations of an insurer than measurements (arguably IRIS ratios, for example) that treat all lines of business on a combined basis.

### **THE CALCULATION OF THE RISK-BASED CAPITAL REQUIREMENT**

There are four broad types of risks included in the calculation of the property/casualty risk-based capital requirement:

Asset Risk-the risk of default and decline in market value of assets.

Credit Risk-the risk that premiums and reinsurance recoverables may not be collected.

Underwriting Risk-includes the risk that prices and/or reserves are not adequate.

Off-Balance Sheet Risk-includes excessive premium growth and potential liabilities not reported in the annual statement.

## **ASSET RISK**

The capital requirement to support the invested asset risk is based on individual capital charges for each of a number of asset categories. The reported value of the assets in each asset category is multiplied by a risk factor that reflects the asset category's relative risk. Bond factors are adjusted up or down based on the number of issuers. The property/casualty formula requires an adjustment for bond diversification and asset concentration, in order to add risk-based capital for insurers with more concentrated portfolios.

## **CREDIT RISK**

Credit risk is the risk of losses from unrecoverable reinsurance and other receivables, such as due and accrued income from interest; dividends from real estate; and recoverables from parents, subsidiaries, and affiliates, among others.

## **UNDERWRITING RISK**

Underwriting risk is primarily the risk of pricing and reserving errors. Since reserves are difficult to estimate with high degrees of accuracy, the question remains as to how much capital is necessary to support any given reserve level. Because reserves for the various types of business possess rather different frequency and severity characteristics and are, therefore, not homogeneous, it is appropriate to make that determination by line of business. The approach that the NAIC adopted is to consider the calendar year reserve developments, by line of business, for the industry as a whole over the last 10 years and to base the capital charges on those developments, selecting the worst year of development as the base for the risk based capital requirement.

However, the formula makes two modifications to this deficiency factor. The first adjustment considers each individual company's reserving experience. Companies with reserve developments that are better than the industry average are given a credit in the formula while

Description of Appendix G - Page 2

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those exhibiting worse reserve developments are surcharged. The second adjustment is for the time value of money. The reserves and the capital requirement are discounted at 5% interest using payment patterns established by the Internal Revenue Service for each line of business. In addition, the formula also makes an adjustment for multi-line companies which lessens the capital required based upon the diversity of premium writings and reserves. Since the proposed mutual assurance fund will only write UST site rehabilitation and third party liability coverages, this diversity adjustment factor would not apply.

The capital to support the other underwriting risk, that is, the risk that current premiums charged are not sufficient to pay future losses, is calculated in much the same way as the reserve risk. Here the formula uses the worst industrywide loss ratio over the past 10 years modified by the company's experience and again discounted for the time value of money. The resultant factor is applied to the previous year's written premium. Thus, the formula establishes a capital standard that requires the industry as a whole to have sufficient capital to survive a repeat of the worse underwriting year in recent history.

The worst case scenario factors for reserves and premiums are modified to increase the RBC required for lines with relatively favorable historical experience and to lower the RBC required for lines with relatively adverse historical experience. This recognizes that particularly favorable or unfavorable historical experience will not necessarily repeat itself in the future.

#### **OFF-BALANCE SHEET RISK**

Off-balance sheet risk is comprised of four factors: non-controlled assets, guarantees for affiliates, contingent liabilities, and premium and reserve growth risk.

Non-controlled assets are the amount of all assets not exclusively under the control of the company, or assets that have been sold or transferred subject to a put option contraction currently in force.

Guarantees for affiliates include guarantees for the benefit of an affiliate that result in a material contingent exposure of the company's assets to liability.

Rapidly growing companies have a greater propensity to encounter financial difficulty. To reflect that additional risk, insurers with growth exceeding an average of 10% per year over the three previous years receive a charge to premiums and reserves.

#### **CALCULATION OF RBC REQUIREMENT**

These four types of risks are combined in a formula that produces the company's Authorized Control Level RBC, which then serves as a standard for regulatory action. However, because it is unlikely that all such possible losses will occur at once, a covariance adjustment is made to the formula.

#### **CALCULATION OF TOTAL ADJUSTED CAPITAL**

Regulators will use a company's RBC requirement as a baseline standard against which to compare that company's Total Adjusted Capital. The Total Adjusted Capital is the sum of a company's statutory capital and surplus adjusted for non-tabular discounts.

Description of Appendix G - Page 4

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